Supreme Court, U.S.
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In The

Supreme Court of the United States

CHARTER COMMUNICATIONS, INC.,

Petitioner,

v.

BROADCAST INNOVATION, L.L.C.,
IO RESEARCH PTY LTD.,

Respondents.

On Petition For Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

1. Whether the court of appeals erred in holding, contrary to the Second, Seventh and Ninth Circuits and its own predecessor court, that a patent is entitled to the priority date of an earlier-filed application, and thus is valid, despite the failure of the patent application to include a "specific reference" to the earlier-filed application as plainly mandated by 35 U.S.C. § 120.

2. Whether the court of appeals erred in failing to defer, contrary to this Court's governing administrative deference jurisprudence, to a U.S. Patent and Trademark Office regulation, 37 C.F.R. § 1.78, which expressly requires that a patent applicant seeking the priority date of an earlier international application must include, in the first sentence of its specification, a reference to the earlier application by international application number and international filing date, and indicate the relationship of the applications.

RULE 29.6 CORPORATE DISCLOSURE STATEMENT

Petitioner Charter Communications, Inc. has no parent corporation and no publicly held corporation owns 10% or more of its stock.

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PETITION FOR A WRIT OF CERTIORARI

Charter Communications, Inc. respectfully petitions for a writ of *certiorari* to review the judgment of the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

The opinion of the Federal Circuit (App., *infra*, 1a-9a) is reported at 420 F.3d 1364 (Fed. Cir. 2005). The opinion of the district court granting petitioner's motion for summary judgment (App., *infra*, 10a-35a) is unreported.

JURISDICTION

The court of appeals entered its judgment on August 19, 2005. A petition for rehearing and rehearing *en banc* was denied on November 8, 2005. The Chief Justice, on January 25, 2006, granted an extension of time for filing a petition for a writ of *certiorari* to and including March 8, 2006. This Court's jurisdiction is invoked under 28 U.S.C. § 1254(1).

STATUTORY AND REGULATORY PROVISIONS INVOLVED

Section 120 of Title 35 of the United States Code as currently codified is reproduced in the appendix to this brief at App., *infra*, 52a, and as codified in 1999 at App., *infra*, 53a. Section 1.78 (2005 and 1999) of Title 37 of the Code of Federal Regulations is reproduced in relevant part in the appendix to this brief at App., *infra*, 53a-55a.

INTRODUCTION

This case presents two important legal questions regarding the construction of the Patent Act of 1952 and the PTO's regulations.

First, the Federal Circuit, in conflict with the precedents of multiple courts of appeals and of its predecessor court, ruled that an inventor, who files for a

patent asserting a priority date based upon the filing date of an earlier-filed application, need not cite to the actual earlier-filed application upon which the inventor relies for the patent's validity. The court of appeals reached this conclusion despite a statutory requirement, 35 U.S.C. § 120, that the inventor include a "specific reference" to that earlier-filed application to which he claims priority. Thus, the decision below can lead only to uncertainty, because the public can no longer determine from the face of an application, without the aid of any extrinsic material, the earlier application to which the new application claims priority. Instead, it becomes the burden and obligation of the public to search through multiple records of the PTO to determine the earliest possible application upon which the inventor bases priority, even though the applicant can easily disclose that information in the application.

Second, the Federal Circuit's ruling is contrary to the PTO's duly promulgated notice-and-comment regulation which has existed for nearly 60 years, 37 C.F.R. § 1.78(a)(2)(i). That regulation requires that a specific reference, to each earlier application to which the later application seeks priority, must be included in the first sentence of the later application's specification. The earlier-filed applications must be identified by application number, or, for international applications, by application number and international filing date, and the relationship of the applications must be indicated. The court of appeals rejected these regulatory requirements and the well-established law of this Court with respect to deference in judicial review of agency regulations. As this Court has made plain, a regulation can possess the force of law and merely the power to persuade, but courts are not empowered to disregard wholesale the agency's position even if it is entitled to lesser deference. Review here is critical because the Federal Circuit's effective invalidation of the PTO's regulation is part of a continuing pattern and practice of inconsistent degrees of deference conferred by the Federal Circuit to the PTO.

The implications of this case are far reaching and will have a profound effect on patent law and, by implication, innovation. The Federal Circuit's decision fundamentally shifts the burden to the public, rather than the applicant, to review a patent to determine the earliest filing date to which it claims priority. The earliest filing date a patent claims is of substantial import to the public, including other inventors and licensees, because it helps determine a patent's validity and the term of the patent, including its expiration date. Prior to the court of appeals' ruling, the earliest application whose filing date a patent could claim was *required*, by statute, to be identified in the application and, by regulation, to be printed in the first sentence of the specification. And, with respect to a patent based upon an earlier-filed international application, the inventor was required to disclose the international filing date. The Federal Circuit's ruling, in conflict with the other courts of appeals that have considered this issue, now obviates these requirements and their benefits to the public. This case presents a particularly good opportunity for the Court's resolution of the issue because the petition does not involve any issues of claim construction or examination of technology regarding the underlying patent. This Court should grant review to resolve the conflict of authority and the confusion concerning the proper deference to be accorded the PTO's regulations.

STATEMENT OF THE CASE

1. The Statutory And Regulatory Framework

a. Congress has authorized the PTO to grant a patent to anyone who "invents or discovers any new and useful process, machine, manufacture, or composition of matter, or * * * improvements thereof." 35 U.S.C. § 101. A patent affords the inventor "the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States" for a limited period, currently set at 20 years from the time of the application filing date. 35 U.S.C. § 154(a)(2).

The grant of a patent is predicated upon an invention's novelty. Inventors forfeit their right to a patent if "the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." 35 U.S.C. § 102(b).

In 35 U.S.C. § 120, Congress provides what amounts to a safe harbor from the Section 102(b) bar against the issuance of a patent for a previously disclosed invention, if that technology was the subject of another patent application naming the same inventor and pre-dating the disclosure. Thus, while an application is pending, an inventor may submit a later application, such as a continuation or divisional application,[1] either of which may obtain "priority" to the filing date of the earlier application for the invention claimed. This means that the claims in the later-filed continuation or divisional application "shall have the same effect, as to such invention, as though filed on the date of the prior application." 35 U.S.C. § 120. In other words, even though an inventor may have disclosed the invention to the public (through patent, printed publication or public use) more than one year prior to the date of the later-filed application, a patent may still issue on the later application if the inventor can trace the current application to an earlier-filed application with a priority date that satisfies Section 102(b), viz., a filing date no later than one year following the public disclosure of the invention.

Claiming priority based upon an earlier-filed application is not without consequence. By properly claiming priority to an earlier-filed application, the length of the term of the patent that results from the later-filed application might be shortened. That is because a patent

[1] A "continuation application" pursues additional claims to an invention disclosed in an earlier application that has not yet been abandoned or matured into a patent. A "divisional application" claims a distinct or independent invention carved out of an earlier application.

term ends either 20 years from "the date on which the application for the patent was filed" or, "if the application contains a specific reference to an earlier filed application or applications under section 120 * * *, from the date on which the earliest *such* application was filed." 35 U.S.C. § 154(a)(2) (emphasis supplied).

Under Section 120, in order for a patent application to claim the priority of an earlier application, the later-filed application must "contain a specific reference to the earlier filed application." 35 U.S.C. § 120. A later-filed application that fails to comply with this requirement cannot claim the benefit of the filing date of the earlier-filed application. Thus, while patents granted by the PTO "shall be presumed valid," 35 U.S.C. § 282, an alleged infringer may overcome this presumption in a suit alleging patent infringement and avoid liability by establishing that the patent is invalid, *ibid.*, including by proof that the invention was disclosed more than one year prior to the priority date of the earliest application "specific[ally] reference[d]" pursuant to Section 120.

b. The PTO, pursuant to its rulemaking authority codified at 35 U.S.C. § 2, promulgated more than 50 years ago, after notice and comment, a regulation, 37 C.F.R. § 1.78, that specifies the procedures that an inventor must follow to obtain the benefit of an earlier filing date under Section 120. Section 1.78 was first promulgated by the Patent Office (the predecessor to the PTO) in 1948 and has been subject only to minor revisions over the course of the intervening 58 years. 13 Fed. Reg. 9580 (Dec. 31, 1948). Under the PTO's current regulations, a patent application

> claiming the benefit of one or more prior-filed copending nonprovisional applications or international applications designating the United States of America must contain or be amended to contain a reference to each such prior-filed application, identifying it by application number (consisting of the series code and serial number) or international application

> number and international filing date and indicating the relationship of the applications.

37 C.F.R. § 1.78(a)(2)(i).

The reference to "each such prior-filed application" must be set forth either in the "specification," "in the first sentence(s) following the title" of the application (which subsequently becomes the first sentence of the patent's specification) or in "an application data sheet," 37 C.F.R. § 1.78(a)(2)(i), (iii), submission of which causes the PTO to print the reference on the patent cover page. 37 C.F.R. § 1.76(a) (application date sheet "is part of the provisional or nonprovisional application for which it is submitted"). Accordingly, the requirements of 37 C.F.R. § 1.78(a) provide notice to other inventors and the public, in the specification on the first page of the application (which becomes the specification in the issued patent), of the earliest application upon which an inventor seeks to base priority (and with respect to priority predicated on an international application, the international filing date).

The version of the regulation in effect during the dispute at issue here did not provide the inventor the option of an application data sheet, however, because the PTO had not yet created that data sheet. 37 C.F.R. § 1.78(a)(2) (1999). Pursuant to 37 C.F.R. § 1.78, however, a patent application has always been required to make specific reference to: (i) the earliest application for which the inventor seeks the benefit of priority, (ii) the relationship between applications, (iii) the application numbers, and (iv) with respect to international applications, the international filing date.

c. Because each country maintains a separate patent scheme, more than 125 countries, including the United States, have entered into the Patent Cooperation Treaty (PCT). The PCT reduces the burdens upon inventors by permitting them to seek patent protection in a large number of countries simultaneously, by filing a single international PCT application. Although an international PCT application protects an inventor's priority rights, it does not mature into a patent. Rather, an applicant must

still file an application in the national patent office (such as the PTO) where a patent is sought. 35 U.S.C. § 371(c).

As a signatory to this treaty, the United States has given effect to the international application process. To that end, "[a]n international [PCT] application designating the United States shall have the effect, from its international filing date * * * of a national application." 35 U.S.C. § 363. So long as an applicant complies with Section 120, "a national application shall be entitled to the benefit of the filing date of a prior international application designating the United States." 35 U.S.C. § 365; *accord* 35 U.S.C. § 120 (providing that a subsequent application "shall have the same effect * * * as though filed on the date of the prior application" "as provided by section 363" so long as it contains a "specific reference to the earlier filed application").

2. Factual And Procedural Background

a. Respondents' U.S. Patent No. 6,076,094 ('094 patent) claims interactive television technology to enable text, video, audio or web page data to be broadcast to television viewers. The '094 patent reflects technology disclosed in three earlier applications. Respondent IO Research Pty Ltd. is the owner of the '094 patent, and respondent Broadcast Innovation, L.L.C. has an exclusive license to the technology.

IO Research is an Australian enterprise. It filed its first patent application involving the subject technology on November 27, 1992 in Australia. Five additional Australian applications were filed within the next year, and all six applications collectively matured into a single Australian patent. On November 26, 1993, IO Research filed in Australia an international PCT application, No. PCT/AU93/00607, designating the United States. This technology was published, as respondents concede, on June 9, 1994. App., *infra*, 17a.

More than a year after that publication, on July 18, 1995, IO Research finally took steps to obtain a United

States patent. It filed with the PTO, pursuant to 35 U.S.C. § 371, a national stage application, U.S. Patent Application Ser. No. 08/436,336 ('336 application), based upon the earlier-filed international PCT application. The '336 application matured into U.S. Patent No. 5,737,595 ('595 patent).

Prior to the issuance of the '595 patent, a continuation application, U.S. Patent Application Ser. No. 09/054,896 ('896 application), was filed on April 3, 1998. This continuation application became U.S. Patent No. 5,999,934 ('934 patent).

Also, before the '896 application matured into the '934 patent, IO Research filed a divisional application, U.S. Patent Application Ser. No. 09/316,164 ('164 application), on May 21, 1999. That divisional application became the '094 patent at issue here.

In its application for the '094 patent, IO Research did not include a specific reference to *any* prior application. Nonetheless, in a transmittal letter (which is neither part of the application nor part of any subsequently issued patent), IO Research purported to claim priority under 35 U.S.C. § 120, to *all* its prior applications. In that letter, IO Research set forth in full the relationship of those earlier applications and identified the international application and its international filing date, stating that it was seeking the benefit of:

> U.S. Patent Application Serial No. 09/054,896 filed April 3, 1998, which is a continuation of U.S. Patent Application Serial No. 08/436,336 filed June 18, 1995, which issued on April 7, 1998 as U.S. Patent No. 5,737,595, which claims priority from PCT Application no. PCT/AU93/00604 filed Nov. 26, 1993, which claims priority from Australian Patent Application No. PL 6080 Filed Nov. 27, 1992.

App., *infra*, 19a-20a.

Upon receipt of the application, the PTO examiner sent IO Research an Office Action on September 20, 1999,

explaining that, with respect to "[p]riority," "[a]n application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78)." App., *infra*, 41a. On January 20, 2000, IO Research amended the '094 patent application to insert in the first sentence of the specification, a reference to its prior '896 application filed on April 3, 1998 and the '336 application filed on July 18, 1995. IO Research failed to include in the amendment to the application any reference to the international PCT application filed on November 26, 1993 or any of the original Australian patent applications filed on and after November 27, 1992, that it had referenced in the initial transmittal letter. Accordingly, the first sentence of the '094 patent specification, which reflects IO Research's amendment, now swears:

> This application is a divisional of U.S. patent application Ser. No. 09/054,896, filed Apr. 3, 1998, now patented as U.S. Pat. No. 5,999,934, which is a continuation of U.S. patent application Ser. No. 08/436,336, filed Jul. 18, 1995, now patented as U.S. Pat. No. 5,737,595.

App., *infra*, 71a. Nowhere in the application or the resultant '094 patent is there any reference to the international PCT application and its November 26, 1993 filing date on which IO Research now bases the priority of its invention. App., *infra*, 57a-82a.

b. Respondent IO Research and its licensee brought this suit in district court on November 7, 2003, alleging that petitioner Charter Communications, Inc. is liable for infringement of the '094 patent. Charter is a nationwide broadband communications company which provides a full range of advanced broadband services to homes and businesses, including cable television, high-speed internet service, and other video and data services.

Charter disputes infringement, and moved for summary judgment, arguing that, among other issues, the '094 patent is invalid as a matter of law because its

earliest priority date, July 18, 1995, falls more than one year *after* the publication of the same technology on June 9, 1994, in contravention of the requirements of 35 U.S.C. § 102(b). Broadcast and IO Research responded that the '094 patent can take the benefit, under 35 U.S.C. § 120, of the international PCT application's November 26, 1993 filing date. Moreover, respondents argued that, to the extent that the PTO regulation, 37 C.F.R. § 1.78, imposes procedures not detailed in Section 120, the regulation is somehow invalid.

The district court granted Charter summary judgment. The court determined that respondents had failed to satisfy the requirement of the statute, 35 U.S.C. § 120, and its corresponding regulation, because the '094 patent application made no reference to the international PCT application and its November 26, 1993 filing date, even though the examiner had "reminded" IO Research of those requirements. App., *infra*, 20a. The court also ruled that the PTO's regulation falls within the broad grant of authority conferred by Congress on the PTO: "Congress, pursuant to the language of 35 U.S.C. § 2(b)(2), has delegated to the Patent and Trademark Office the power to promulgate certain rules and regulations." App., *infra*, 26a. Accordingly, the court invalidated the patent pursuant to 35 U.S.C. § 102(b) and held that "[t]he July 18, 1995 priority date claimed by the '094 Patent Application pursuant to the terms of the * * * Regulation as required by the Director is more than one year after the June 9, 1994 foreign publication date" of the technology. App., *infra*, 34a. Finally, in reaching this conclusion, the court noted that IO Research could correct this failure by seeking a certificate of correction from the PTO. App., *infra*, 34a-35a.

c. The court of appeals reversed. App., *infra*, 1a-9a. The Federal Circuit acknowledged, as it had to, that "[t]he '094 patent does not include a specific reference to the initial Australian patent applications or the PCT application on its cover or in its specification." *Id.* at 3a. Nevertheless, the court held that, "[w]here proper reference to a national stage

application exists, no reference to the corresponding PCT application is required because the national stage application effectively has the same U.S. filing date as the PCT application." *Id.* at 7a. The court of appeals reached this conclusion without any acknowledgment of the well-developed body of law construing 35 U.S.C. § 120 and 37 C.F.R. § 1.78(a).

The Federal Circuit found the district court's "error" to be "very understandable under the circumstances" because "the '094 patent itself states that the '595 patent was 'filed Jul. 18, 1995.'" App., *infra*, 8a. According to the court of appeals, while "[t]echnically this statement is correct," the *actual* filing date of July 18, 1995 "[wa]s not the *effective* U.S. filing date," which was instead the unstated filing date of November 26, 1993 for the international PCT application. *Id.* at 9a. Thus, in the court of appeals' view, the "specific reference" requirement of 35 U.S.C. § 120 and the procedures promulgated by the PTO at 37 C.F.R. § 1.78(a) are satisfied without any reference at all to the initial application to which priority is claimed, so long as the inventor cites an application that has an "effective[]" filing date of the prior application for which the inventor seeks the benefit of priority.

The court of appeals denied a petition for panel rehearing or rehearing *en banc*. App., *infra*, 36a-37a.

REASONS FOR GRANTING THE PETITION

Review by this Court of the decision of the Federal Circuit is necessary to ensure the proper and uniform resolution of important questions regarding the priority and validity of patents and the degree of administrative deference accorded to the PTO for its validly promulgated notice-and-comment regulations.

Under the Federal Circuit's precedent, patent applicants are no longer required to disclose the basis for priority in an application, and the public must now search the PTO's records to trace a patent's priority history, contrary to congressional intent. The Federal Circuit's

wholesale, judicial revision of the PTO's notice-and-comment regulation also casts aside the PTO's specialized expertise in how to implement Congress's intent, in direct conflict with this Court's precedents.

If left unreviewed, the Federal Circuit's decision will create considerable uncertainty as to the validity of patents and the disclosure requirements applicants must meet because it conflicts with several other circuits, and it will perpetuate the doubt surrounding the scope of deference that the PTO is due. Because the Federal Circuit's appellate jurisdiction is predicated upon whether a patent law issue is raised in a complaint (invoking the Federal Circuit's removal jurisdiction) rather than in an answer, counterclaim, or other defensive pleading (leaving jurisdiction with the regional courts of appeals), not all patent appeals will be adjudicated under the Federal Circuit's standard. Thus, the validity of some patents may depend upon what posture the patent claims are raised before the district court. The arbitrary nature of this result will certainly lead to forum shopping and preemptive litigation (either to raise a patent claim in a complaint to trigger the Federal Circuit's jurisdiction or to omit a patent claim in a complaint so as to avoid it). And most significantly, the court of appeals' decision will have a dramatic effect on the manner in which the public must examine patents for quick and straightforward priority examinations, effectively shifting the burden from the applicant, who is most knowledgeable, to the public. The Court should grant *certiorari* to resolve these important issues and reject the Federal Circuit's position.

I. THE FEDERAL CIRCUIT'S DECISION CONFLICTS WITH LONGSTANDING DECISIONS OF OTHER CIRCUITS REGARDING THE CRITICAL QUESTION OF PATENT VALIDITY

The decision of the Federal Circuit creates a conflict of authority between the court with the primary responsibility for adjudicating the Nation's patent appeals

and three of the most populous regional courts of appeals, which retain jurisdiction over some cases involving patent validity issues. Prior to the court of appeals' ruling in this case, 35 U.S.C. § 120 was universally applied, in accordance with its express terms, to require a later-filed patent application to include a "specific reference" to each prior application, tracing the relationships between the applications backwards to the application upon which the inventor sought to base priority. The Federal Circuit's decision, by obviating this "specific reference" requirement of the statute, disrupts more than four decades of settled expectations regarding an inventor's disclosure of the basis for priority, which previously could be readily determined from the specification of the patent.

A. The Federal Circuit's Decision Is In Direct Conflict With Decisions Of The Second, Seventh, And Ninth Circuits And The Federal Circuit's Predecessor Court

1. On one side of the legal divide are those courts of appeals that, in conflict with the Federal Circuit, correctly hold that the express terms of 35 U.S.C. § 120 require an inventor seeking the benefit of the priority date of an earlier-filed application to include a "specific reference" to that prior application in the later-filed application. These courts recognize that anything less than an explicit reference to the earliest-filed application upon which the inventor bases priority renders the "specific reference" requirement of Section 120 nugatory. Moreover, these courts appreciate that the "specific reference" requirement of Section 120 relieves the public of the substantial burdens associated with long and expensive searches through the PTO's records to determine the priority date of patents which base their priority on earlier-filed applications, that may or may not themselves have matured into patents. To that end, these courts have plainly rejected the arguments that it is sufficient to refer to an intermediate patent application and not back to the

application the priority for which the inventor seeks to assert, and have invalidated patents that have failed to comply with Section 120's requirements.

The genesis of this body of case law dates back more than 40 years to *Hovlid v. Asari*, 305 F.2d 747 (9th Cir. 1962). In *Hovlid*, an inventor filed an application for a patent on January 18, 1954, which was abandoned when he filed a continuation application on November 29, 1955, which included a specific reference to the prior 1954 application and its filing date. *See id.* at 749. That continuation application subsequently matured into his first patent and had the priority date of January 18, 1954. *See id.* at 748. The inventor then filed an application for a second patent, which contained only the following reference to his first patent and no reference to the initial 1954 application: "'This application is a division application Serial No. 550,039 filed by me November 29, 1955 and issued to me on May 26, 1956 as Patent No. 2,748,075.'" *Ibid.* (quoting application).

In a later infringement action, the district court held that the second patent was invalid under 35 U.S.C. § 102(b) because the invention had been in use more than one year prior to November 29, 1955 (the filing date of the continuation application). *Id.* at 749. On appeal, the inventor proffered an argument indistinguishable from that made by respondents in the instant case (and adopted by the Federal Circuit). In short, he argued that, even though the application that matured into his second patent contained no reference to the original January 18, 1954 application upon which he sought to base priority, his reference to his first patent from the continuation application was sufficient because that patent, itself, had the earlier *effective* priority date of the original application. *Id.* at 750.

The Ninth Circuit soundly rejected that card-house argument. Construing both 35 U.S.C. § 120 and the PTO's Rule 78 (as set forth at 37 C.F.R. § 1.78), the court of appeals correctly held that both dictate "that if the benefit

of the filing date of a prior application is claimed, the subsequent application must contain or be amended to contain a reference in the specification to the prior application identifying it by serial number and filing date and indicating the relationship of the applications." *Hovlid*, 305 F.2d at 751. Because the inventor "failed to state the serial number, filing date and the relationship of the second patent to the abandoned application," there was a "complete failure to comply with Rule 78 and Section 120, and consequently, a waiver of the benefits afforded by the latter section." *Id.* at 751-752.

The Seventh Circuit reached the same conclusion in *Stickler Industrial Supply Corp. v. Blaw-Knowx Co.*, 405 F.2d 90 (7th Cir. 1968), where it addressed the circumstance where "a third patent application was a division of a second application which was a continuation-in-part of the first application," and "[t]he question [of] whether the third application may obtain the benefit of the filing date of the first application by cross-referencing only to the second application, which in turn cross-references to the first." *Id.* at 91. The Seventh Circuit correctly concluded that the inventor's third application was not entitled to the benefit of the priority date of the first application, "because neither the [third] application nor patent contains 'a specific reference' to the [first application]" as required by 35 U.S.C. § 120. *Id.* at 92. The Seventh Circuit specifically reached this conclusion even though "the second * * * application was entitled to the filing date of the first application since it specifically cross-referenced to the first application." *Id.* at 93.

Like the Ninth and Seventh Circuits, the Second Circuit has also squarely adopted a position with which the Federal Circuit now conflicts. In *Sampson v. Ampex Corp.*, 463 F.2d 1042 (2d Cir. 1972), the court of appeals resolved an infringement dispute where an inventor filed three applications relating to the same invention – on November 14, 1961, in March 1963, and on June 24, 1964

– the last of which matured into the patent at issue in the infringement action. *Id.* at 1043.

The inventor asserted that Section 120 permitted him to take "the benefit of the filing date" of the November 14, 1961 application "even though there was no 'specific reference' in the 1964 application to the 1961 application." *Id.* at 1043, 1045. According to the inventor, since "the applications constitute a direct chain so that appellant can have the benefit of the 1961 filing date because the 1964 application referred to the 1963 application which referred to the 1961 application." *Id.* at 1045. Citing both *Hovlid* and *Stickler*, the Second Circuit unequivocally rejected this constructive compliance argument: "§ 120 has been interpreted, we believe correctly, to require that for a subsequent application to have the benefit of the filing date of an earlier application, it must contain the 'specific reference' to the application the filing date of which the applicant seeks to have the benefit." *Ibid.*

These decisions are anything but outliers or aberrations. Indeed, the Federal Circuit's predecessor court, the Court of Customs and Patent Appeals, adopted this plain language and common sense construction of 35 U.S.C. § 120. In *In re Henricksen*, 399 F.2d 253 (C.C.P.A. 1968), the court of appeals explained that the "specific reference" requirement of Section 120 was "satisfied" because the application explicitly referred to *all* prior applications. *Id.* at 256 & n.6 (citing *Hovlid*, 305 F.3d 747). Not surprisingly, the leading treatise on patent law prescribes this approach as well. *See* 4A David S. Chisum, *Chisum on Patents* (2004) § 13.06[2] ("An application must refer to the remote application in order to obtain the benefit of its filing date, and it must not omit reference to any intermediate application necessary to maintain a chain of copendency and disclosure.").

In short, a clear majority of the courts of appeals that have addressed the issue have mandated that an inventor who seeks the benefit of the priority date of an earlier-filed application must "specific[ally] refer[]" to *that* application

in the later-filed application. Under the precedent of these appellate courts, respondents' '094 patent would not be permitted to benefit from the priority date of the international PCT application because there is no reference whatsoever to that application or the international filing date anywhere in the '094 patent or its application. The '094 patent is therefore not entitled to that earlier filing date for the purposes of priority and, like the patents at issue in *Hovlid*, *Stickler* and *Sampson*, the '094 patent is invalid under 35 U.S.C. § 102(b), because the claimed invention already was published more than one year before the earliest priority date to which the patent is entitled.

2. The Federal Circuit stands alone in its contrary ruling, which not only creates a clear split with the still valid precedents of the Second, Seventh and Ninth Circuits, but also reflects a radical departure from the Court of Custom and Patent Appeals' application of Section 120. The Federal Circuit reached its decision without even acknowledging these substantial contrary authorities, even though the issue involves statutory and regulatory interpretation which is well within the regional courts of appeals' expertise.

Although the Federal Circuit acknowledged that "[t]he '094 patent does not include a specific reference to * * * the PCT application," it held that a citation to an intermediate application nevertheless satisfied 35 U.S.C. § 120 and 37 C.F.R. § 1.78(a), because the intermediate application has an "effective" filing date concomitant with the actual filing date of the earlier international PCT application. App., *infra*, 7a.

The ramifications of this decision are potentially breathtaking. Take, for example, a string of applications beginning with A and ending with G (*e.g.*, applications A, B, C, D, E, F, G). Under the precedents of the Second, Seventh and Ninth Circuits, application G is entitled to the filing date of application A only if application G refers specifically to applications F, E, D, C, B and A. Under this regime, anyone searching for the priority date of patent G

would know, from application G and the resultant patent G, that the earliest priority date the inventor seeks to assert is the filing date of application A. By contrast, under the Federal Circuit's decision, patent G is entitled to the filing date of application A even if application G refers only to one of any of the intermediate applications that themselves have the *effective* filing date of application A, even if that intermediate patent cites only to another intermediate patent. As a consequence, an individual seeking the priority date of patent G might have to look at the filing dates for each of the intermediate applications F, E, D, C and B to discover that G claims the benefit of the filing date of application A.

B. Review Is Necessary To Avoid Inconsistent Rulings On Patent Validity Because Some Patent Cases Remain Within The Regional Circuits' Jurisdiction

This conflict of authorities between lower courts is not inchoate. It is no answer to rely upon the grant of "exclusive jurisdiction" to the Federal Circuit in cases where a district court's jurisdiction "was based, in whole or in part, on section 1338" of title 28. 28 U.S.C. § 1295(a)(1). Although the Federal Circuit maintains exclusive jurisdiction over appeals where the district court's jurisdiction was predicated upon an action "arising under any Act of Congress relating to patents," 28 U.S.C. § 1338(a), that broad grant does not encompass all actions involving the validity of a patent. Rather, as this Court reaffirmed, "the Federal Circuit's jurisdiction is fixed with reference to that of the district court, and turns on whether *the action arises under* federal patent law." *Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc.*, 535 U.S. 826, 829 (2002) (emphasis supplied).

Accordingly, where the patent component of a dispute is first raised in an answer, a counterclaim, or other responsive pleading, the regional court of appeals rather than the Federal Circuit maintains jurisdiction over any

appeal. *See id.* at 831 ("Allowing a counterclaim to establish 'arising under' jurisdiction would also contravene the longstanding policies underlying our precedents."); *Christianson v. Colt Indus. Operating Corp.*, 486 U.S. 800, 809 (1988) ("a case raising a federal patent-law defense does not, for that reason alone, 'arise under' patent law, 'even if the defense is anticipated in the plaintiff's complaint, and even if both parties admit that the defense is the only question truly at issue in the case.'" (quoting *Franchise Tax Bd. of Cal. v. Construction Laborers Vacation Trust for S. Cal.*, 463 U.S. 1, 14 (1983))).

Indeed, by preserving some jurisdiction for the regional courts of appeals to hear patent cases, Congress dictated that "other circuits will have some role to play in the development of this area of the law." *Holmes Group*, 535 U.S. at 839 (Stevens, J., concurring in part and concurring in the judgment). That preserved jurisdiction is of assistance to the Court because "[a]n occasional conflict in decisions may be useful in identifying questions that merit this Court's attention." *Ibid.* This is precisely such a case.

Review here will help guard against institutionalized "pro-patent bias" that may tend to arise in a specialized court but not in "occasional decisions by courts with broader jurisdiction." *Id.* at 839 & n.4. The fact that the regional courts of appeals, with more general jurisdiction and an obvious expertise in construing statutes and regulations, have reached a contrary conclusion is a good indication that the Federal Circuit's judgment may have been clouded by a "pro-patent bias."

Finally, the limited frequency with which patent cases arise in other circuits underscores the need for more immediate intervention by this Court when a conflict arises between the Federal Circuit and other courts of appeals. This conflict will percolate at a much slower pace in the other regional circuits than in the typical case involving the correct interpretation of a federal statute and regulation. All the while, however, the conflict will

require the district courts within the Second, Seventh and Ninth Circuits to apply two different interpretations of the same statute, depending upon which jurisdiction the dispute arises under. The decision below involves a straightforward construction of statutes and regulations, does not involve any patent technology, and provides an ideal vehicle to resolve this dispute.

II. THE COURT OF APPEALS DEFIED THIS COURT'S PRECEDENTS BY FAILING TO DEFER TO A PTO REGULATION AND DEFEATS THE INTENT OF THE STATUTE AND REGULATION THAT A PATENT APPLICATION NOTIFY THE PUBLIC OF THE BASIS FOR ITS PRIORITY

A. The Federal Circuit's Decision Reflects Its Continued Ad Hoc Approach To Deference For The PTO, Contrary To This Court's Precedents

The Federal Circuit's ruling ignores the plain language of the PTO's regulation, 37 C.F.R. § 1.78(a), that was validly promulgated after notice-and-comment rulemaking. By the express terms of the regulation, in order for a patent applicant to claim the benefit of the filing date of a prior application, Section 1.78 requires "a reference to each * * * prior application" identified "by application number," or in the case of an international PCT application by "international application number and international filing date," and an explanation of "the relationship of the applications." 37 C.F.R. § 1.78(a)(2)(i) (1999). Rather than defer to this regulation, the court of appeals instead eliminated *each* of these requirements. The court excused IO Research's failure to refer to the international PCT application number and its international filing date or to proffer any explanation as to the relationship between the international PCT application and the other applications. This judicial revision of the PTO's regulation plainly violates the

principles of administrative deference as set forth by this Court, and it reflects the Federal Circuit's continued practice of refusing to treat the PTO like other administrative agencies.

1. It is well settled that where Congress has delegated to an agency the authority to issue regulations, the agency's properly promulgated regulations within that scope are entitled to substantial deference under *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984). *See United States v. Mead Corp.*, 533 U.S. 218, 227 (2001) ("[A] particular statutory provision qualifies for *Chevron* deference when it appears that Congress delegated authority to the agency generally to make rules carrying the force of law, and that the agency [rule] claiming deference was promulgated in the exercise of that authority."). Under *Chevron*, such regulations are binding upon "the courts unless procedurally defective, arbitrary or capricious in substance, or manifestly contrary to the statute." *Ibid.*

Moreover, *even if* an agency regulation is not entitled to *Chevron* deference, courts are not authorized to merely cast aside the agency's work. Rather, "the well-reasoned views of the agencies implementing a statute 'constitute a body of experience and informed judgment to which courts and litigants may properly resort for guidance.'" *Bragdon v. Abbott*, 524 U.S. 624, 642 (1998) (quoting *Skidmore v. Swift & Co.*, 323 U.S. 134, 139-140 (1944)). To this end, this Court has "'long recognized that considerable weight should be accorded to an executive department's construction of a statutory scheme it is entrusted to administer * * *.'" *Mead*, 533 U.S. at 227-228 (quoting *Chevron*, 467 U.S. at 844). Accordingly, an agency's deference under *Skidmore* "depend[s] upon the thoroughness evident in its consideration, the validity of its reasoning, its consistency with earlier and later pronouncements, and all those factors which give it power to persuade, if lacking power to control." *Skidmore*, 323 U.S. at 140. These factors, which examine "the degree of

the agency's care, its consistency, formality, and relative expertness, and to the persuasiveness of the agency's position," *Mead*, 533 U.S. at 228 (footnotes omitted), *must* be considered where an agency rule falls outside of the deference afforded under *Chevron*, *id.* at 234-235 (vacating Federal Circuit's decision for failing to consider *Skidmore* deference).

2. In contrast to this Court's methodical approach to administrative deference, the Federal Circuit's approach with respect to the PTO has been rife with inconsistent, *ad hoc* applications of deference, corrected to some extent by this Court. Indeed, this Court has explicitly held that the PTO is to be afforded the same deference that is otherwise accorded to other federal agencies. In *Dickinson v. Zurko*, 527 U.S. 150 (1999), this Court corrected the court of appeals' failure to properly defer to the PTO's findings of fact. Rather than review the PTO's factfinding under the substantial evidence standard, 5 U.S.C. § 706, the Federal Circuit had reviewed such findings under a "clearly erroneous" standard of review. *Dickinson*, 527 U.S. at 153-154. Rejecting the court of appeals' approach, this Court recognized that the Federal Circuit's less deferential standard undermined "the importance of maintaining a uniform approach to judicial review of agency action * * *." *Id.* at 154.

The Court's decision in *Dickinson v. Zurko* focused, however, on agency factfinding, not the PTO's regulations. Confusion and tension still persist regarding the deference to which the PTO's regulations are entitled. Thus, there is a continued failure on the part of the Federal Circuit to apply consistently this Court's administrative deference precedents and to recognize that the PTO's regulations are entitled to *Chevron* deference.

In *Merck & Co., Inc. v. Kessler*, 80 F.3d 1543 (Fed. Cir. 1996), the Federal Circuit held that the PTO's regulations are not entitled to *Chevron* deference because "Congress has not vested the Commissioner with any general substantive rulemaking power." *Id.* at 1549-1550. This

holding is wrong and in direct conflict with *Lacavera v. Dudas*, ___ F.3d ___, 2006 WL 266061 (Fed. Cir. Feb. 6, 2006), where the Federal Circuit recognized that, under 35 U.S.C. § 2(b)(2), "the PTO has broad authority to govern the conduct of proceedings before it" and deferred to the PTO's regulations under the *Chevron* framework. *Id.* at *3.

Indeed, decisions where the Federal Circuit has engaged in *de facto* revisions to PTO regulations, without giving any deference to agency intent, are plainly illustrative of this problem. *Ulead Systems, Inc. v. Lex Computer & Management Corp.*, 351 F.3d 1139, 1151 (Fed. Cir. 2003) (Newman, J., dissenting) (accusing panel of "negating the [PTO's] regulations and ignoring the deference appropriate to the PTO" and explaining that the court's "authority * * * does not extend to rewriting agency regulations").[2]

Likewise, even when not applying *Chevron*, the Federal Circuit has struggled to give deference to PTO interpretations under *Skidmore*. *Hoechst Aktiengesellschaft v. Quigg*, 917 F.2d 522, 526 (Fed. Cir. 1990) ("Since this court must reject administrative constructions of the

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[2] *Ulead Systems* involved the standard for invalidating a patent (inequitable conduct or fraud) where a patentee inaccurately claimed entitlement to small entity status (which results in reduced patent maintenance fees). The Federal Circuit held the PTO's regulation, which prohibits "[a]ny attempt to *fraudulently*" use small entity status merely proscribes the court's inequitable conduct standard. *Ulead Systems*, 351 F.3d at 1145 (quoting 37 C.F.R. § 1.28(d) (1993)). Thus, the court "d[id] not need to decide whether [its] standard or the standard in the PTO rule should prevail in the event of a conflict." *Ibid.* The dissent noted that the standards were not the same, because "[r]eference to the inequitable conduct rule had previously been dropped from the regulation." *Id.* at 1151 (Newman, J., dissenting). Whereas fraud requires rigorous proof, inequitable conduct is ordinarily "unclean hands" before the PTO that affects patentability. *Ibid.* It was therefore not accurate for the panel majority to claim "that it 'need not decide' whether to apply 'our standard' or 'the standard in the PTO rule.'" *Ibid.* Thus, according to the dissent, the court of appeals had "rewrit[ten] agency regulations." *Ibid.*

statute that are inconsistent with the statutory mandate, we give no deference to the agency's interpretations and conclusions," even though there was "sufficient ambiguity * * * to accommodate and bear the weight of both [interpretations]."). Finally, judges on the Federal Circuit are in open disagreement as to when the PTO is entitled to deference under *Auer v. Robbins*, 519 U.S. 452 (1997), for interpretations of its own regulations. *Dethmers Mfg. Co., Inc. v. Automatic Equip. Mfg. Co.*, 272 F.3d 1365, 1380 (Fed. Cir. 2001) (Dyk, J., dissenting) ("There is simply no basis for treating the PTO differently from any other administrative agency."); *Dethmers Mfg. Co., Inc. v. Automatic Equip. Mfg. Co.*, 293 F.3d 1364 (Fed. Cir. 2002) (six judges dissenting from the denial of rehearing *en banc*).

This uncertainty undermines both the integrity and stability of the nation's patent system which has always been a cornerstone of the national economy. Only review by the Court can rectify the divergent applications of *Chevron* and *Skidmore*, and the circumstances where the Federal Circuit affords no deference to the PTO.

3. The Federal Circuit's ruling here is plainly emblematic of this confusion. Although the court of appeals cited 37 C.F.R. § 1.78, its conclusion that this regulation requires only "some reference to earlier filed applications," App., *infra*, 7a, is plainly contradicted by the detailed procedures outlined by the regulation, 37 C.F.R. § 1.78(a)(2)(i) (1999) (requiring "a reference to each * * * prior filed application" identified "by application number" or in the case of an international PCT application by "international application number and international filing date," and an explanation of "the relationship of the applications.").[3] The court's ruling in no manner constitutes an application of these procedures; rather, it

[3] As previously noted, the current Section 1.78 is virtually identical to the 1999 version in effect during the instant case. *See* page 6 *supra*.

affects an unstated invalidation, or at best a revision, of the PTO's regulation.

Nowhere do this Court's precedents permit a lower federal court to undertake such a revision of an agency's regulation, however. Rather, this Court has held that an agency's regulation, if not invalid, must be given effect, whether as controlling under *Chevron* or to the extent persuasive under *Skidmore*. *Mead*, 533 U.S. at 234 ("To agree with the Court of Appeals that Customs ruling letters do not fall within *Chevron* is not, however, to place them outside the pale of any deference whatever.").

The PTO's regulation at issue here is controlling under *Chevron*. The "starting point" for the inquiry is the "authority Congress has delegated to the" agency. *Gonzales v. Oregon*, 126 S. Ct. 904, 916 (2006). Here, Congress vested the PTO with broad power to "establish regulations, not inconsistent with law, which * * * shall govern the conduct of proceedings in the Office * * *." 35 U.S.C. § 2(b)(2)(A); *see* 35 U.S.C. § 6(a) (1995). Congress has "explicitly left a gap for the agency to fill, [and] there is an express delegation of authority to the agency." *Chevron*, 467 U.S. at 843-844; *see also Mead*, 533 U.S. at 229 ("[A] very good indicator of delegation meriting *Chevron* treatment is express congressional authorizations to engage in the process of rulemaking * * *.").[4]

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[4] Congress implicitly acknowledged the PTO's authority to promulgate 37 C.F.R. § 1.78 when it codified Section 120. The regulation pre-dates the Patent Act of 1952, *see* 13 Fed. Reg. 9580-9581 (Dec. 31, 1948). Therefore, by enacting 35 U.S.C. § 120, Congress merely codified existing laws, which included the specific requirements of the PTO's regulation. *A Bill to Revise and Codify the Laws Relating to Patents and the Patent Office, and to Enact into Law Title 35 of the United States Code Entitled "Patents": Report on H.R. 7794 from the House Comm. on the Judiciary*, 82d Cong. 20 (1952) (noting that Section 120 codifies existing law "not codified in the statute" except that a "specific[ity]" requirement was being added to the reference to the first patent).

The PTO's regulation clearly falls within that delegated power because 37 C.F.R. § 1.78 outlines the procedures that an applicant must follow, during the patent prosecution process, to receive the benefit of the filing date of an earlier application.[5] Thus, the PTO's regulation is binding "unless procedurally defective, arbitrary or capricious in substance, or manifestly contrary to the statute." *Mead*, 533 U.S. at 227.

There can be no sound argument that 37 C.F.R. § 1.78 is invalid under *Chevron*'s deferential standard. The PTO promulgated the regulation after notice and comment. *See* 70 Fed. Reg. 30365 (May 26, 2005); 70 Fed. Reg. 3891 (Jan. 27, 2005); 69 Fed. Reg. 56541 (Sept. 21, 2004). And the regulation merely creates reasonable procedures to require compliance with the "specific reference" requirement of the statute, 35 U.S.C. § 120.

Moreover, *even if* this Court were to conclude that the PTO regulation were not entitled to deference under *Chevron*, the court of appeals still violated the basic tenets of administrative law by not examining the regulation under *Skidmore*. *Mead*, 533 U.S. at 234. Indeed, under that less deferential standard, the PTO regulation fares very well. The PTO is a highly specialized agency charged with administering the world's most complex and important patent system. Inventors across the world file applications with the United States, many of whom seek to base the priority of their invention on international PCT applications filed abroad. The PTO's procedures, as

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[5] In Section 120, Congress has also provided that "[n]o application shall be entitled to the benefit of an earlier filed application under this section unless an amendment containing the specific reference to the earlier application is submitted at such time during the pendency of the application as required by the Director." 35 U.S.C. § 120. Although the "as required by the Director" language became effective on November 28, 2000, it unquestionably reaffirms Congress's delegation to the PTO to promulgate regulations to implement the "specific reference" requirement.

evident from 37 C.F.R. § 1.78, are aimed at reconciling the tensions associated with granting inventors priority based upon earlier-filed applications (including international applications) and the public's need for complete disclosure, in the specification of the issued patent, of the basis for any claim to an earlier priority date. Moreover, the PTO has consistently maintained this position for nearly six decades, having first promulgated the rule in 1948, *see* 13 Fed. Reg. 9580 (Dec. 31, 1948), and the rule has been thoroughly tested, having undergone public notice and comment on numerous occasions. In short, this is precisely the type of administrative rule that merits substantial, near controlling deference under *Skidmore*. *Mead*, 533 U.S. at 228; *Skidmore*, 323 U.S. at 140.

Finally, in no manner can respondents claim compliance with 37 C.F.R. § 1.78 on the grounds that the omitted application was an international PCT application, and that such an application is somehow excused from being referenced. First, the regulation explicitly requires that *more*, not less, information be provided with respect to international applications upon which an applicant relies for priority. *See* 37 C.F.R. § 1.78(a)(2) (national applications must be referenced "by application number" while international applications must be referenced by "international application number and international filing date"). Second, the international PCT application and the national stage are distinct filings, with different filing numbers and dates.[6] A national stage application must be

[6] The court of appeals held, based on its interpretation of 35 U.S.C. § 363, that "the national stage application effectively has the same U.S. filing date as the PCT application." App., *infra*, 7a. In fact, Section 363 provides that an international PCT application "shall have the effect" of a national application, not vice versa. Likewise, Section 120 provides that a later-filed application "shall have the same effect" as a prior application if its requirements are met. But that "effect" does not permit an inventor to refer only to an intermediate application to seek the benefit of an earlier application, without referencing the earlier

(Continued on following page)

filed with the PTO, and include a separate filing fee and an oath or declaration from the inventor. 35 U.S.C. § 371(c). Third, and most importantly, Congress has explicitly provided that "a national application shall be entitled to the benefit of the filing date of a prior international application designating the United States" only "[i]n accordance with *the conditions and requirements of* section 120 of this title." 35 U.S.C. § 365(c) (emphasis supplied). Thus, Congress, not just the PTO, has deemed it necessary for an inventor to comply with the "conditions and requirements of section 120" in order to get the benefit of the filing date of an international application.

B. The Federal Circuit's Failure To Defer To The PTO Undermines An Important Congressional Policy To Make Readily Available In A Patent's Specification The Basis Of The Patent's Priority

The Federal Circuit's ruling undermines the important public policy "embodie[d]" in Section 120, which the PTO's regulation plainly aims to effect. *Sampson*, 463 F.2d at 1045. As the Second Circuit has explained:

> Although § 120 might appear to be a technical provision, it embodies an important public policy. The information required to be disclosed is information that would enable a person searching the records of the Patent Office to determine with a minimum of effort the exact filing date upon which a patent applicant is relying to support the validity of his application or the validity of a patent issued on the basis of one of a series of applications. In cases such as this, in which two or more applications have been filed and the validity of a patent rests upon the

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application, merely because the intermediate application "ha[s] the same effect" of the earlier application.

> filing date of an application other than that upon which the patent was issued, a person, even if he had conducted a search of the Patent Office records, could unwittingly subject himself to exactly this type of infringement suit unless the later application adequately put him on notice that the applicant was relying upon a filing date different from that stated in the later application.

Ibid. The Federal Circuit's decision in this case, which will prove binding in a substantial number of circumstances, *will* require the public to undertake more burdensome searches to avoid possible infringement. This is so, even though "[t]he inventor is the person best suited to understand the relation of his applications, and it is no hardship to require him to disclose the information" in the application's specification. *Sticker Industrial Supply*, 405 F.2d at 93.

Indeed, the instant case demonstrates that this requirement is not any type of a technical trap for the unwary. Respondent IO Research was specifically notified by the examiner of the flaw in its application regarding priority and given an opportunity to correct that error. App., *infra*, 41a. When respondents then amended their application to include citations to earlier applications to claim priority, however, the record reveals a conscious decision by IO Research not to include a specific reference to the international PCT application which had been included in the initial transmittal letter. Rather, IO Research narrowed its amendment not to extend the priority reference back to that application and their attempt to do so now, in litigation, is unsound.

Significantly, IO Research's failure to claim proper priority back to the international PCT application does not mean that its patent is forever invalid. IO Research may still, even today, correct its patent through a petition to the PTO. 35 U.S.C. § 255. Indeed, petitioner pointed that out below and the district court understood that point.

App., *infra*, 34a-35a. The only problem from IO Research's perspective is that in litigation that is pending when a certificate of correction is sought or obtained, the asserted patent "must be considered without the benefit of the certificate of correction." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1356 (Fed. Cir. 2003) (citation omitted). Thus, the Federal Circuit ruling was necessary only to allow respondent to unfairly pursue a recovery of damages from Charter based on an invalid patent. Certainly such circumstances do not justify the overthrow of the system established by Congress for claiming priority to an earlier-filed application, as implemented by the PTO through duly promulgated regulations.

CONCLUSION

For the reasons set forth above, the petition for a writ of *certiorari* should be granted.

Respectfully submitted,

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APPENDIX A

United States Court of Appeals
for the Federal Circuit

05-1008

BROADCAST INNOVATION, L.L.C.
and IO RESEARCH PTY LTD.,

Plaintiffs-Appellants,

-v.

CHARTER COMMUNICATIONS, INC.,

Defendant-Appellee,

and

COMCAST CORPORATION,

Defendant.

Paul M. Smith, Jenner & Block LLP, of Washington, DC, argued for plaintiffs-appellants. With him on the brief were Jonathan T. Suder and Edward R. Nelson III, Friedman, Suder & Cooke, of Fort Worth, Texas; and Edward W. Goldstein and Corby R. Vowell, Goldstein & Faucett, L.L.P., of Houston, Texas.

Beth S. Brinkmann, Morrison & Foerster LLP, of Washington, DC, argued for defendant-appellee. On the brief were Robert M. Harkins, Jr., of San Francisco, California; and David C. Doyle and Jose L. Patino, of San Diego, California.

Appealed from: United States District Court for the District of Colorado

Judge Alan B. Johnson

DECIDED: August 19, 2005

Before MAYER, RADER, and DYK, Circuit Judges.

RADER, Circuit Judge.

On summary judgment, the United States District Court for the District of Colorado determined that U.S. Patent No. 6,076,094 (the '094 patent) is invalid under 35 U.S.C. § 102(b). *Broadcast Innovation L.L.C. v. Charter Communications, Inc.*, 03-WY-2223-AJ (BNB) (D. Col. Aug. 4, 2004) (*Summary Judgment Order*). Because the district court improperly determined the '094 patent's priority date, this court reverses.

I.

IO Research Pty. Limited of Australia (IO Research) owns the '094 patent. Broadcast Innovation L.L.C. (Broadcast), by exclusive license, has the right to enforce the '094 patent in the United States. *Summary Judgment Order*, slip op. at 4 n.7. Broadcast sued Comcast Corp. (Comcast) and Charter Communications, Inc. (Charter) on November 7, 2003, alleging infringement of claims 8, 15, 22 and 29 of the '094 patent. Comcast settled with the plaintiffs on June 28, 2004, and thus is not a party to the present appeal. With the court's permission, IO Research later joined the litigation. *Id.* at 2. Broadcast and IO Research will collectively be referred to as "IO" throughout this opinion.

Before trial, Charter filed a motion for summary judgment that "the '094 Patent is invalid as a matter of law because its earliest priority date – July [18,] 1995 –

falls more than one year after the [June 9, 1994] publication of [PCT/AU93/00607] regarding the same technology." *Id.*, slip op. at 4. The district court granted Charter's motion on August 3, 2004, and this appeal followed. *Id.*, slip op. at 25. This court has jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) (1994).

II.

The '094 patent claims a distributed database system with applicability to data broadcasting and data casting communications media. '094 patent, col. 1, II. 11-14. This distributed database system was initially disclosed in a series of three Australian patent applications filed in the fall of 1992 and the winter of 1993, and later consolidated into a single international application PCT/AU/93/00607 (the PCT application) filed on November 26, 1993. *Summary Judgment Order*, slip op. at 7. The PCT application became a national stage application in the United States on July 18, 1995 as no. 08/436,336 (the '336 application). The '336 application eventually matured into U.S. Patent No. 5,737,595 (the '595 patent).

Before issuance of the '595 patent, the applicant filed a continuation application as 09/054,896 (the '896 application). The '896 application, in turn, matured into U.S. Patent No. 5,999,934 (the '934 patent). Again before issuance of the '934 patent, the applicant filed a divisional application 09/316,164 (the '164 application). This divisional matured into the '094 patent which is at issue in the present case.

The '094 patent does not include a specific reference to the initial Australian patent applications or the PCT application on its cover or in its specification. During

prosecution of the '164 application (the application that became the '094 patent), the applicant filed a transmittal letter and an oath & declaration claiming priority to the Australian applications and the PCT application. The '094 patent itself merely states:

> This application is a divisional of U.S. patent application Ser. No. 09/054,896, filed Apr. 3, 1998, now patented as U.S. Pat. No. 5,999,934, which is a continuation of U.S. patent application Ser. No. 08/436,336, filed Jul. 18, 1995, now patented as U.S. Pat. No. 5,737,595.

'094 patent, col. 1, II. 4-8. The district court based its summary judgment of invalidity on the absence of any specific reference to the PCT application on the face of the '094 patent.

III.

This court reviews the district court's grant or denial of summary judgment under the law of the regional circuit. *Chamberlain Group, Inc. v. Skylink Techs., Inc.*, 381 F.3d 1178, 1191 (Fed. Cir. 2004). Under the law of the tenth circuit, the grant or denial of a summary judgment motion is reviewed de novo. *Simms v. Oklahoma ex rel. Dep't of Mental Health & Substance Abuse Servs.*, 165 F.3d 1321, 1326 (10th Cir. 1999). A summary judgment motion requires the trial court to ascertain that the case presents no genuine issues of material fact. *See* Fed. R. Civ. P. 56(c); *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986). Indeed this case presents no disputed issues of fact relevant to the district court's invalidity determination. The '094 patent includes a specific reference to its predecessors, the '934 patent and the '595 patent, but does not include a specific

reference to the PCT application on its cover or in its specification. Thus, the issue before this court is purely a question of law – namely, what is the priority date of the '094 patent in the absence of a specific reference to the PCT application?

The district court based its priority determination on its interpretation of various statutes and regulations. This court reviews the district court's interpretation of statutory and regulatory provisions without deference. *Merck & Co. v. Kessler*, 80 F.3d 1543, 1549 (Fed. Cir. 1996). In that review, appellate courts may address arguments beyond those originally presented by the parties to the district court, particularly where the issue presents significant questions of general impact or of great public concern as in the present case which potentially impacts a large number of patents originating from foreign applications. *See L.E.A. Dynatech, Inc. v. Allina*, 49 F.3d 1527, 1531 (Fed. Cir. 1995) (*citing Dean Witter Reynolds, Inc. v. Fernandez*, 741 F.2d 355, 360-61 (11th Cir. 1984); *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1575 (Fed. Cir. 1992)). Section 120 of title 35 sets forth requirements for a U.S. patent to claim priority based on an earlier filed application:

> An application for patent for an invention disclosed . . . in an application previously filed in the United States, or [in a PCT application designating the U.S.] as provided by section 363 of this title . . . shall have the same effect . . . as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and ***if it contains or is amended to contain a***

specific reference to the earlier filed application.

35 U.S.C. § 120 (effective to November 28, 2000) (emphasis added). 35 U.S.C. § 120 was amended in 1999 by Pub. L. No. 106-113 to add:

> No application shall be entitled to the benefit of an earlier filed application under this section unless an amendment containing the specific reference to the earlier filed application is submitted at such time during the pendency of the application as required by the Director. The Director may consider the failure to submit such an amendment within that time period as a waiver of any benefit under this section. The Director may establish procedures, including the payment of a surcharge, to accept an unintentionally delayed submission of an amendment under this section.

35 U.S.C. § 120 (effective Nov. 29, 2000). Both versions of § 120 state that a patent application must contain a "specific reference" to an earlier filed application to qualify for the filing date of the prior application. This court need not address which version of the statute controls because the outcome is the same in either case.

The United States Patent & Trademark Office (USPTO) has promulgated regulations to specify the procedures for claiming priority under § 120. *See* 37 C.F.R. § 1.78(a)(2)(i) (1997) (requiring specific reference in the first sentence of the specification). 37 C.F.R. § 1.78(a) was amended after issuance of the '094 patent to allow applicants to file an application data sheet (ADS) including priority information for an application instead of or along with providing reference in the specification itself, the

ADS causing the USPTO to print the priority information on the patent cover page. *See* 37 C.F.R. § 1.78(a)(2)(iii) (2000). Both versions of the statute, as well as the 1997 version and the 2000 version of § 1.78(a), require some reference to earlier filed applications (i.e., in the specification or on the cover page) to qualify for priority based on those earlier filings. Here the applicant properly referenced the national stage of a PCT application (i.e., the application that became the '595 patent). Where proper reference to a national stage application exists, no reference to the corresponding PCT application is required because the national stage application effectively has the same U.S. filing date as the PCT application. Therefore, under either version of the statute or the regulation, the reference in the '094 patent to the '595 and '934 patents meets the statutory and regulatory requirements.

In the present case, the '094 patent includes a reference to the '595 patent and the '934 patent in the first sentence of the specification and on its cover page. '094 patent, col. 1, II. 4-8. The '595 patent has the earliest U.S. filing date and thus becomes "the prior application" under § 120 for the '094 patent specification. Beyond the reference to the '595 and '934 patents, the '094 specification properly states the relationship of the '094 patent to the '595 patent and the '934 patents: the '094 patent is a divisional of the '934 patent, which is a continuation of the '595 patent. This "specific reference" in the '094 patent entitles the applicant to claim priority from the date of the '595 patent's U.S. filing. Because this case does not raise any other issues relevant to 35 U.S.C. § 120, such as copendency between the pending application and "the first application" or "an application similarly entitled to the benefit of the filing date of the first application," this court

turns to a determination of the U.S. filing date of the '595 patent.

As previously mentioned, the applicant filed the '595 patent on July 18, 1995, as the U.S. national stage application of the original PCT application. However, July 18, 1995 is not the "U.S. filing date" of the '595 patent. Specifically, under 35 U.S.C. § 363, the international filing date of a PCT application is also the U.S. filing date for the corresponding national stage application. 35 U.S.C. § 363 (1984); *see also* Manual of Patent Examining Procedure (MPEP) § 1893.03(b) (8th Ed. including May 2004 revisions) ("It should be borne in mind that the filing date of the international application is also the filing date for the national stage application."). Thus, the '595 patent's U.S. filing date is November 26, 1993, the filing date of the PCT application. Because the '094 patent is entitled to priority back to the '595 patent's U.S. filing date, the '094 patent's priority date under 35 U.S.C. § 120 as well as its term calculation date under 35 U.S.C. § 154(a)(2) is at least November 26, 1993. In other words, the '094 patent, which specifically references the '595 patent and thus satisfies the requirements of 35 U.S.C. § 120 and 37 C.F.R. § 1.78(a), is entitled to effectively the same date as the original PCT application.

The district court did not give the '094 patent the benefit of the U.S. filing date of the '595 patent, or the filing date of the original PCT application. Due to this error, the trial court found that WO94/13102, the June 9, 1994 publication of the PCT application, anticipated the '094 patent under 35 U.S.C. § 102(b). *Summary Judgment Order*, slip op. at 23-24. Actually this error is very understandable under the circumstances: the '094 patent itself states that the '595 patent was "filed Jul. 18, 1995." '094

patent, col. 1, l. 7. Technically this statement is correct because the '336 application that matured into the '595 patent was filed on July 18, 1995. However, that national stage filing date in this instance is not the effective U.S. filing date for this PCT application under 35 U.S.C. § 363. Because this court finds the '094 patent is at least entitled to a priority date of November 26, 1993, which is prior to June 9, 1994, this court reverses the district court's invalidity determination.

IV.

In sum, this court reverses the district court's finding that the '094 patent is invalid under 35 U.S.C. § 102(b) over WO94/13102. This court does not address the district court's Order of Claim Construction dated March 22, 2004. IO "take[s] modest issue here with the claim construction orders" and argues "that the district court misconstrued three claim terms." However, the invalidity determination presently before this court does not require resolution of any issues of claim interpretation. Thus, this court declines to address the claim construction issues that are not properly before this court at this time. *See Heil Co. v. McNeilus Truck and Mfg., Inc.*, 111 F.3d 141 (Fed. Cir. 1997) (refusing to hear untimely claim construction issues). The case is remanded to the district court for further proceedings consistent with this opinion.

COSTS

Each party shall bear its own costs.

REVERSED

APPENDIX B

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

BROADCAST INNOVATION L.L.C. and IO RESEARCH PTY LTD., Plaintiffs, vs. CHARTER COMMUNICATIONS INC., Defendant.	Case No. 03-WY-2223-AJ (BNB)

ORDER GRANTING DEFENDANT'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF U.S. PATENT 6,076,094

(Filed Aug. 4, 2004)

This is a case of patent infringement in which plaintiffs Broadcast Innovation L.L.C. (hereinafter "Broadcast") and IO Research Pty Ltd. (hereinafter "IO Research") allege that Charter Communications Inc. (hereinafter "Charter") infringed directly or indirectly claims 8, 15, 22, 29 of United States Patent No. 6,076,094 (hereinafter "'094 Patent"), The above-entitled matter comes before the Court on Motion and Memorandum in Support of the Motion of Defendant Charter Communications Inc. for Summary Judgment of Invalidity of U.S. Patent 6,076,094. The Court, having reviewed the motion, the materials filed in support thereof and in opposition thereto, and being fully advised in the premises, FINDS and ORDERS as follows:

FACTUAL AND PROCEDURAL BACKGROUND

On November 9, 2001, in a case related to the present action entitled *Broadcast Innovation L.L.C. v. Echostar Communication Corp.*, Civil Action No. 01-[WY]-2201-AJ (BNB) (hereinafter "*Echostar* case"), Broadcast filed suit against Echostar Communications Corporation (hereinafter "Echostar") alleging the infringement of two separate U.S. Patents – the '094 Patent and United States Patent No. 4,993,066 (hereinafter "'066 Patent"). Briefly, the '094 Patent claims an invention relating to broadcasting data to a television set using a carrier signal, and the '066 Patent claims a method for television scrambling.

On January 6, 2003, Magistrate Judge Boyd N. Boland issued an Order on Issues of Claim Construction in the *Echostar* case interpreting claims 8, 15, 22, and 29 of the '094 Patent, and claims 9, 10, and 11 of the '066 Patent. Thereafter, this Court denied Echostar's appeal in upholding the Magistrate Judge's construction of the '094 Patent, and, additionally, this Court granted Echostar's appeal and concurrently granted a judgment of invalidity as to the '066 Patent. As a result, the '094 Patent remains the point of interest.

On November 7, 2003, Broadcast filed its Original Complaint in the above-entitled matter demanding, *inter alia*, judgment that one or more claims of the '094 Patent have been infringed, either literally and/or under the doctrine of equivalents, by Comcast Corporation (hereinafter "Comcast") and Charter and/or by others to whose infringement Comcast and Charter have contributed and/or by others whose infringement has been induced by Comcast and Charter.

On March 25, 2004, the Court entered a Stipulated Order Regarding Claim Construction Procedure mandating as follows:

> The Magistrate Judge's January 6, 2003 *Order on Issues of Claim Construction,* relative to the '094 Patent, and the Court's *Order* dated August 29, 2003 in the case entitled *Broadcast Innovation L.L.C. v. Echostar Communication Corp.,* Civil Action No. 01-[WY]-2201-AJ (BNB) (the "Collateral Litigation") (orders collectively the "Collateral Litigation Claim Construction Orders") will apply in this case.
>
> There will be no additional claim construction hearing in this case, and the parties will not reargue the claim construction issues raised in the Collateral Litigation Claim Construction Orders. However, the defendants adopt and preserve all claim construction arguments and objections to the Collateral Litigation Claim Construction Orders made by defendants in the Collateral Litigation, and the plaintiff adopts and preserves all claim construction arguments and objections to the Collateral Litigation Claim Construction Orders made by the plaintiff in the Collateral Litigation, and the arguments and objections of each side will be preserved for appeal in this case.
>
> Charter Communications Inc. may file supplemental arguments and objections, if any, directed to the Collateral Litigation Claim Construction Orders on or before May 1, 2004 (to be filed in a document separate from any motions for summary judgment), and Comcast Corporation may join in those supplemental objections. Broadcast Innovation L.L.C. will have ten days from the filing of any supplemental arguments

and objections to file a response. Any such supplemental arguments and objections, and any arguments made in response, will be preserved for appeal in this case and shall not require a hearing or a further order from this Court.

This order will not bar any party from raising an argument on summary judgment that may require Claim terms to be construed, so long as the argument does not contradict the Collateral Litigation Claim Construction Orders.

On April 2, 2004, the Court granted Broadcast's Unopposed Motion for Leave to Join Party Plaintiff IO Research. Concurrently on April 2, 2004, Broadcast filed its First Amended Original Complaint joining IO Research in its request for judgment.[1]

On April 12 and 13, 2004, Comcast and Charter, respectively, filed Answers to Broadcast and IO Research's First Amended Complaint including, therewith, individual

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[1] The First Amended Original Complain provides in relevant part:

7. On June 13, 2000, U.S. Patent No. 6,076094 ("the '094 patent") was duly and legally issued for a "Distributed Database System and Database Received Therefor." A copy of the '094 patent is attached as *Exhibit A* and is made a part hereof. IO RESEARCH is the owner and assignor of the '094 patent and by exclusive license, BROADCAST has the right to enforce the '094 patent in the United States and collect damages for all relevant times. This First Amended Original Complaint joins IO RESEARCH as a voluntary party Plaintiff because, by virtue of the exclusive license agreement with BROADCAST, IO RESEARCH maintains a financial interest in any recovery in this litigation, and because the outcome here may have implications for IO RESEARCH's efforts to enforce the '094 patent's foreign counterparts.

counterclaims for declaratory judgment of both invalidity and non-infringement of the '094 Patent.

On May 5, 2004, Charter filed its Motion and Memorandum In Support of the Motion of Defendant Charter Communications Inc. for Summary Judgment of Invalidity of U.S. Patent 6,076,094. Therein, Charter first contends that the '094 Patent is invalid as a matter of law because its earliest priority date – July 18, 1995 – falls more than one year after the publication of prior patents regarding the same technology. Secondly, Charter included the following provision at the conclusion of its Motion:

> **V. THE '094 PATENT IS INVALID FOR THE ADDITIONAL REASONS STATED IN SEPARATE MOTIONS IN WHICH CHARTER JOINS, FILED BY OTHER PARTIES**
>
> Charter hereby joins in and adopts COMCAST CORPORATION'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF UNITED STATES PATENT NO. 6,076,094 (dated May 3, 2004); DIRECTV'S, HUGHES', AND THOMSON'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF THE ASSERTED CLAIMS OF UNITED STATES PATENT NO. 6,076,094 (date April 4, 2003, in Civil Action No. 01-WY-2201-AJ (BNB)); DEFENDANT ECHOSTAR COMMUNICATION CORPORATION'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF UNITED STATES PATENT NO. 6,076,094 (dated April 4, 2003, in Civil Action No. 01-WY-2201-AJ (BNB)); DIRECTV AND HUGHES' REPLY IN SUPPORT OF THEIR MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF THE ASSERTED CLAIMS OF UNITED STATES PATENT NO. 6,076,094 ([d]ated June 4, 2003, in

> Civil Action no. 01-WY-2201-AJ (BNB)); THOMSON'S REPLY TO PLAINTIFF BROADCAST INNOVATION, L.L.C.'S OPPOSITION TO DEFENDANTS' MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF THE ASSERTED CLAIMS OF UNITED STATES PATENT NO. 6,076,094 (dated June 4, 2003, in Civil Action No. 01-WY-2201-AJ (BNB)); and DEFENDANT ECHOSTAR COMMUNICATIONS CORPORATION'S REPLY BRIEF IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF UNITED STATES PATENT NO. 6,076,094 (dated June 4, 2003, in Civil Action No. 01-WY-2201-AJ (BNB)).

Accordingly, and in addition to its own Motion in the present action, Charter has joined in and adopted a host of pleadings filed both in the present action and in the *Echostar* case.

On May 24, 2004, Broadcast and IO Research filed Plaintiffs' Opposition to the Defendants' Motions for Summary Judgment of Invalidity of U.S. Patent Number 6,076,094. Therein, Broadcast and IO Research contend that the '094 Patent properly claims priority to the international PCT application, and that there is no evidence in the record to support a finding of invalidity as to the '094 Patent by combining any of the prior art references.

STANDARD OF REVIEW

Summary judgment is proper when there is no genuine issue of material fact to be resolved at trial. Fed. R. Civ. P. 56(c); *Nebraska v. Wyoming,* 507 U.S. 584, 590 (1993). Thus, a district court may grant summary judgment "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits,

if any, show that there is no genuine issue of material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c); *Nelson v. Geringer,* 295 F.3d 1082, 1086 (10th Cir. 2002). "An issue of material fact is genuine where a reasonable jury could return a verdict for the party opposing summary judgment." *Seymore v. Shawver & Sons, Inc.,* 111 F.3d 794, 797 (10th Cir. 1997).

In applying these standards this Court will view the evidence in the light most favorable to the party opposing summary judgment. *Jenkins v. Wood,* 81 F.3d 988, 990 (10th Cir. 1996). The movant bears the initial burden of demonstrating the absence of evidence to support the non-moving party's claims. *Celotex Corp. v. Catrett,* 477 U.S. 311, 325 (1986). When the non-moving party bears the burden of proof at trial, the burden then shifts to it to demonstrate the existence of an essential element of its case. *Id.* To carry this burden, the non-moving party must go beyond the pleadings and designate specific facts to show there is a genuine issue for trial. *Anderson v. Liberty Lobby, Inc.,* 477 U.S. 242, 251 (1986); *Ford v. West,* 222 F.3d 767, 774 (10th Cir. 2000). The mere existence of a scintilla of evidence in support of the non-moving party's position is insufficient to create a "genuine" issue of disputed fact. *Lawmaster v. Ward,* 125 F.3d 1341, 1347 (10th Cir. 1997).

The party asserting invalidity must overcome the presumption of patent validity with facts supporting such a conclusion by clear and convincing evidence. 35 U.S.C. § 285; *Dana Corp. v. American Axle & Manufacturing Inc.* 279 F.3d 1372, 1375 (Fed. Cir. 2002).

ANALYSIS

I. Summary Judgment

During the fall of 1992 and the winter of 1993, IO Research filed with the Australian Patent Office a series of patent applications. On November 20, 1993, those patent applications were consolidated into a single omnibus patent application (hereinafter "1993 PCT Application").[2] Pursuant to the Patent Cooperation Treaty of 1970, 35 U.S.C. §§ 351-76, the 1993 PCT Application was filed singly and separately, designating the United States of America as a country within which a patent would be sought. Charter represents to the Court, and neither Broadcast nor IO Research dispute, that the 1993 PCT Application was published on June 9, 1994.

On July 18, 1995, IO Research filed U.S. Patent Application No. 08/436,336 (hereinafter "1995 Application"). On April 7, 1998, the 1995 Application matured into U.S. Patent No. 5,737,595 (hereinafter "'595 Patent"). The '595 Patent is not at issue in this litigation, though reference thereto is helpful for the purpose of factual context.

On April 3, 1998, four days before the issuance of the '595 Patent, IO Research filed a continuation application[3] relating to the '595 Patent assigned U.S. Application No.

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[2] According to Charter, it is undisputed that the 1993 PCT Application described the same inventions that are claimed in the '094 Patent.

[3] "A continuation application is one that is filed during the pendency of an application previously filed by the same inventor, called the original or 'parent' application, and which discloses and claims only subject matter disclosed and claimed in the original or parent application." *Reynolds Metals co. v. Continental Group Inc.*, 525 F. Supp. 950, 970 (N.D. Ill. 1981).

09/054,896 (hereinafter "Continuation Application"). On December 7, 1999, the Continuation Application matured into U.S. Patent No. 5,999,934 (hereinafter "'934 Patent"). Similarly, the '934 Patent is not at issue in this litigation but rather remains helpful for the purpose of factual context.

During the prosecution of the Continuation Application, IO Research claimed the benefit of the priority date of the 1993 PCT Application by amending the first sentence of the specification, in compliance with 37 C.F.R. § 1.78(a)(2)(i), to read, "This Application is a continuation . . . of Application Serial No. 08/436,336 filed on July 18, 1995, Patent Number: 5,737,595, which is a [35 U.S.C. § 371] of PCT/AU93/00607, filed November 26, 1993." As a result of this amendment, the first sentence of the '934 Patent's specification reads:

> This application is a continuation of application Ser. No. 08/436,336 filed on July 18, 1995, U.S. Pat. No. 5,737,595, which is a [35 U.S.C. § 371] of PCT/AU93/00607 filed November 26, 1993.

On May 20, 1999, IO Research filed a divisional application[4] assigned U.S. Application No. 09/316,164

[4] "A later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in the earlier or parent application, is known as a divisional application or 'division.'" MANUAL OF PATENT EXAMINING PROCEDURE § 201.06 (5th ed. 1983). "A divisional patent application is used when the disclosure of the parent application supports an invention not covered by the original patent claims. A divisional application is also used when two distinct inventions are initially claimed in an application and the Patent Office requires restriction between them, and the applicant elects which invention to prosecute in that application and the other invention becomes the subject of the divisional

(Continued on following page)

(hereinafter "'094 Patent Application"). Within the oath portion of the '094 Patent Application,[5] IO Research claimed foreign priority benefits under 35 U.S.C. § 119 of a host of Australian patent applications including, and limited to, Australian Patent Application No, PL 6080 filed Nov. 27, 1992, Australian Patent Application No. PM 0549, filed Aug. 13, 1993, Australian Patent Application No. PM 0742, filed Aug. 20, 1993, Australian Patent Application No. PM 1570, filed Sep. 30, 1993, Australian Patent Application No. PM 1571, filed Sep. 30, 1993, and Australian Patent Application No. PM 1621 filed Oct. 1, 1993. Within that oath, IO Research did not claim any priority benefits under 35 U.S.C. § 120.

Alongside the '094 Patent Application, and similar to the oath of that application, IO Research's May 21, 1999 transmittal letter to the Patent and Trademark Office with regard to the '094 Patent Application provided:

> As required under 35 U.S.C. [§] 120, the Specification of the attached application includes the following specific reference to the earlier filed parent application:
>
> > "This Application is a divisional of co-pending U.S. Patent Application Serial No. 09/054,896 filed April 3, 1998, which is a continuation of U.S. Patent Application Serial No. 08/436,336 filed June 18, 1995, which issued on April 7, 1998 as U.S. Patent

application." Ernest Bainbridge Lipscomb III, WALKER ON PATENTS § 9:16 (3d ed. 1985).

[5] Federal law provides that a patent application shall include "an oath by the applicant as prescribed by section 115 of this title." 35 U.S.C. § 111(a)(2)(C).

> No. 5,737,595, which claims priority from PCT Application no. PCT/AU93/00604 filed Nov. 26, 1993, which claims priority from Australian Patent Application No. PL 6080 filed Nov. 27, 1992, and from Australian Patent Application No. PM 0549, filed Aug. 13, 1993, and from Australian Patent Application No. PM 0742, filed Aug. 20, 1993, and from Australian Patent Application No. PM 1570, filed Sep. 30, 1993, and from Australian Patent Application No. PM 1571, filed Sep. 30, 1993, and from Australian Patent Application No. PM 1621 filed Oct. 1, 1993.
>
> Upon the issuance of the parent application, Applicants will amend the specification to include the U.S. Patent No. of the parent.

In a subsequent Office Action Summary, the Patent Examiner reminded applicant IO Research that "[a]n application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 C.F.R. [§] 1.78)." In response to this Office Action Summary, IO Research filed on January 31, 2000 a Reply to Office Action Mailed September 20, 1999 seeking to amend the specification of the 1094 Patent Application as follows:

> After the title and before "Technical Field" please insert: This application is a divisional of U.S. Patent Application Serial No. 09/054,896, filed April 3, 1998, now patented as U.S. Patent No. 5,999,934, which is a continuation of U.S. Patent Application Serial No. 08/436,336, filed July 18, 1995, now patented as U.S. Patent No. 5,737,595.

Neither this amendment, nor any subsequent amendment, to the '094 Patent Application added any reference of the 1993 PCT Application to the specification language. As a result, the earliest priority date referenced in the first sentence of the '094 Patent specification is the July 18, 1995 date of the 1995 Application, which is more than one year after the June 9, 1994 publication date of the 1993 PCT Application.

Federal law provides that "[a] person shall be entitled to a patent unless ... the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States. . . . " 35 U.S.C. § 102(b). It is not disputed that the June 9, 1994 publication of the 1993 PCT Application satisfies the relevant portion of the foregoing statute. It is disputed, however, whether the '094 Patent Application properly claimed priority to the 1993 PCT Application. With respect to the priority dates of patent applications in relation to earlier filed foreign patent applications, federal law continues:

> An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application, or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is

> amended to contain a specific reference to the earlier filed application. *No application shall be entitled to the benefit of an earlier filed application under this section unless an amendment containing the specific reference to the earlier filed application is submitted at such time during the pendency of the application as required by the Director.* The Director may consider the failure to submit such an amendment within that time period as a waiver of any benefits under this section. The Director may establish procedures, including the payment of a surcharge, to accept an unintentionally delayed submission of an amendment under this section.

35 U.S.C. § 120 (emphasis added).[6] Within the context of this statute and under the authority delegated pursuant to 35 U.S.C. § 2(b)(2),[7] the Patent and Trademark Office

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[6] 35 U.S.C. § 363 provides, "An international application designating the United States shall have the effect, from its international filing date under article 11 of the treaty, of a national application for patent regularly filed in the Patent and Trademark Office except as otherwise provided in section 102(e) of this title."

[7] 35 U.S.C. § 2(b)(2) provides:

> (b) Specific powers. The [Patent and Trademark] Office –
>
> * * *
>
> (2) may establish regulations, not inconsistent with law, which –
>
> (A) shall govern the conduct of proceedings in the Office;
>
> (B) shall be made in accordance with section 553 of title 5, United States Code;
>
> (C) shall facilitate and expedite the processing of patent applications, particularly those which can be filed, stored, processed, searched, and retrieved electronically, subject to the provisions of section 122 relating to the confidential status of applications;

(Continued on following page)

promulgated the following regulation in force at the May 20, 1999 date of the '094 Patent Application.:

> Except for a continued prosecution application filed under §1.53(d), any nonprovisional application claiming the benefit of one or more prior filed copending nonprovisional applications or international applications designating the United States of America *must contain or be amended to contain to the first sentence of the specification* following the title a reference to each such prior application, identifying it by application number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications. The request for a continued prosecution application under §1.53(d) is the specific reference required by

---

> (D) may govern the recognition and conduct of agents, attorneys, or other persons representing applicants or other parties before the Office, and may require them, before being recognized as representatives of applicant or other persons, to show that they are of good moral character and reputation and are possessed of the necessary qualifications to render to applicants or other persons valuable service, advice, and assistance in the presentation or prosecution of their applications or other business before the office;
>
> (E) shall recognize the public interest in continuing to safeguard broad access to the United States patent-system through the reduced fee structure for small entities under section 41(h)(1) of this title; and
>
> (F) provide for the development of a performance-based process that includes quantitative and qualitative measures and standards for evaluating cost-effectiveness and is consistent with the principles of impartiality and competitiveness;
>
> * * *

35 U.S.C. § 2(b)(2)(A)-(F).

> 35 U.S.C. [§] 120 to the prior application, The identification of an application by application number under this section is the specific reference required by 35 U.S.C. [§] 120 to every application assigned that application number. Cross-references to other related applications may be made when appropriate (see §1.14(a)).

37 C.F.R. § 1.78(a)(2)(i) (1997) (emphasis added) (hereinafter "1997 Regulation").[8]

Charter contends that the '094 Patent is invalid under 35 U.S.C. § 102(b) because the patent benefits, at the earliest, from the July 18, 1995 date of the 1995 Application, and because that July 18, 1995 priority date is more than one year after the June 9,1994 foreign publication date of the 1993 PCT Application. Specifically, Charter continues that IO Research, in applying for the '094

---

[8] This is the relevant language of 37 C.F.R. § 1.78(a)(2)(I) as of May 20, 1999, the filing date of the '094 Patent Application. The language of that same regulation has since been amended numerous times with its most current version omitting the "first sentence of the specification" requirement and appearing as such:

> Except for a continued prosecution application filed under § 1.53(d), any nonprovisional application or international application designating the United States of America claiming the benefit of one or more prior-filed copending nonprovisional applications or international applications designating the United States of America must contain or be amended to contain a reference to each such prior-filed application, identifying it by applications number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications. Cross references to other related applications may be made when appropriate (see § 1.14).

37 C.F.R. § 1.78(a)(2)(I) (2003) (hereinafter "2003 Regulation").

Patent, neglected to make specific reference within the first sentence of the patent specification to the 1993 PCT Application, and, instead, made specific reference within the first sentence of the specification to, at the earliest, the July 18, 1995 date of the 1995 Application.

Broadcast and IO Research first counter that federal statutory language trumps any inconsistent federal regulatory language, and the fact that the '094 Patent Application complies with the language of 35 U.S.C. § 120, by way of 35 U.S.C. § 111, with regard to the imposition of the November 20, 1993 priority date secures patent validity. Secondly, Broadcast and IO Research counter that assuming the federal regulations govern the priority date procedure, IO Research did, in fact, comply with the terms of the regulations insofar as the '094 Patent Application contained specific references to the 1993 PCT Application in the declaration/oath, the transmittal letter, and the Patent and Trademark Office's own data sheet.

A. Validity of the 1997 Regulation

It is axiomatic that a federal agency, such as the Patent and Trademark Office, cannot promulgate regulations lest those regulations are consistent with statutory provisions enacted by Congress. *See Nagahi v. Immigration & Naturalization Service*, 219 F.3d 1166, 1169 (10th Cir. 2000) (an agency cannot create regulations which are beyond the scope of its delegated authority); *Spears v. Merit Systems Protection Board*, 766 F.2d 520, 523 (Fed. Cir. 1985).

> When faced with a challenged to the validity of a regulation, we apply the analytical framework provided by the United States Supreme

> Court in *Chevron*. As an initial matter; we decide "whether Congress has directly spoken to the precise question at issue." [*Chevron U.S.A. Inc. v. Natural Resources Defense Council Inc.*, 467 U.S. 837, 842 (1984)]. If the statute is clear and unambiguous "that is the end of the matter, for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." *K-Mart Corp. v. Cartier Inc.*, 486 U.S. 281, 291 (1988) (quoting *Board of Governors of the Federal Reserve System v. Dimension Financial Corp.*, 474 U.S. 361, 368 (1986) (quoting *Chevron*, 467 U.S. at 842-43)). If, however, the statute does not speak directly to the question at issue or is ambiguous, the court, giving considerable weight to the agency's interpretation, must decide if the agency's answer is "a permissible construction of the statute." *Chevron*, 467 U.S. at 843.

Sundance Associates Inc. v Reno, 139 F.3d 804, 807-08 (10th Cir. 1998). The view of the agency charged with administering the statute is entitled considerable deference; to sustain it, we need not find that it is the only permissible construction but only that the agency's is a sufficiently rational one to preclude a court from substituting its judgment for that of the agency. *Chemical Manufacturer's Association v. Natural Resources Defense Council Inc.*, 470 U.S. 116, 125 (1985). In short, "The agency's regulations must be upheld unless they are arbitrary, capricious, or manifestly contrary – to the statute." *Home Mortgage Bank v. Ryan*, 986 F.2d 372, 376 (10th Cir. 1993).

As mentioned, Congress, pursuant to the language of 35 U.S.C. § 2(b)(2), has delegated to the Patent and Trademark Office the power to promulgate certain rules and regulations. "By this grant of power, we understand

Congress to have 'delegated plenary authority over [Patent and Trademark Office] practice' . . . to the Office." *Stevens v. Tamai*, 366 F.3d 1325, 1333 (Fed. Cir. 2004).

As noted above, the 1997 Regulation, the federal regulation in place at the time of the '094 Patent Application and thusly the governing provision, mandated, "[A]ny provisional application *claiming the benefit* of one or more *prior filed* . . . international applications designating the United States of America must contain or be amended to contain in the first sentence of the specification following the title a reference to each such prior application, identifying it by application number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications." 37 C.F.I. § 1.78(a)(2)(i) (1997). Such regulatory language is, in effect, more narrow than that of the relevant statutory provision, 35 U.S.C. § 120, in that it requires not only specific reference to the earlier filed application, but it also requires said reference fall within the "first sentence of the specification." It is this Court's opinion that such narrow language is not inconsistent with the relevant statutory provision enacted by Congress, that such narrow language is not beyond the scope of the authority delegated to the Patent and Trademark Office, and that such narrow language is not arbitrary, capricious, or manifestly contrary to the terms of the federal statute. First, the additional requirement that the patent applicant include all priority dates within a particular section of the patent application seems no more unjust than requiring the payment of a specific application

fee.[1] Just as the Patent and Trademark Office is best suited to determine an appropriate filing fee, a fee which no doubt changes over time, it is similarly well-suited to determine the most appropriate means of specifying a patent's priority date. Secondly, it is this very expertise to which Congress defers when it insists that the present application make specific reference to the priority application "as required by the Director." Indeed, at the relevant time the Director of the Patent and Trademark Office, by way of the administrative regulations, required that the '094 Patent Application contain a reference to the priority application, in this case the 1993 PCT Application, within the first sentence of the specification. Accordingly, the Court finds and concludes that the regulation in place at the time of the '094 Patent Application is not inconsistent with the relevant statutory provision, and is therefore proper and valid as a matter of law.

1. Compliance with 35 U.S.C. § 120

In defense of patent validity, Broadcast and IO Research first counter that the '094 Patent is entitled to the benefit of the filing date of the 1993 PCT Application because the '094 Patent Application complied with the terms of 35 U.S.C. § 120 with respect to that priority date,

---

[1] Federal law provides, "The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within. such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Director." 35 U.S.C. § 111(a)(3). In turn, a pertinent regulation provides, for example, that small entities pay $375.00 in basic filing fees and other than small entities pay $750.00 in basic filing fees for an original patent application. *See* 37 C.F.R. § 1.16.

and because the Patent and Trademark Office, by way of regulations, cannot deny a patent applicant its rights under federal law as the agency has done through the more demanding language of the 1997 Regulation. Specifically, Broadcast and IO Research cite to language from two Federal Circuit cases in support of their defense. Broadcast and IO Research first state, "The plain and unambiguous meaning of [35 U.S.C. § 120] is that any application fulfilling the requirements therein 'shall have the same effect' as if filed on the date of the application upon which it claims priority." *Transco Products Inc. v. Performance Contracting Inc.*, 38 F.3d 551, 556-57 (Fed. Cir. 1994). Broadcast and IO Research also insist that neither the Patent and Trademark Office nor the Courts can deny rights granted under the mandatory, rather than permissive, language of 35 U.S.C. § 120. *Racing Strollers Inc. v. Tri Industries Inc.*, 878 F.2d 1418, 1421 (Fed. Cir. 1989).

The Court disagrees with the defense. First, neither referenced decision addresses either the language of the, relevant administrative regulation or its intersection with the federal statute. Moreover, neither case deals with an application error similar to the one before this Court. True, the quoted language seems on point, however to take the language out of its true context and place it within a context more befitting of the stated defense, as Broadcast and IO Research would have us do, would, in effect, trivialize an otherwise valid administrative regulation. In other words, the cited cases do not, in this Court's reading, stand for the proposition that compliance with 35 U.S.C. § 120 provides the requested priority date even if that same patent application fails to comply with the terms of an analogous, though somewhat more demanding, administrative regulation.

Secondly, the Court finds that compliance with statutory language does not excuse noncompliance with related, validly promulgated regulation language. To find otherwise would undermine directly the very force and effect of 35 U.S.C. § 2(b)(2) wherein Congress delegated rulemaking authority to the Patent and Trademark Office. Moreover, it would amount to a certain kind of irony were the Court to undercut the power of one statute, namely 35 U.S.C. § 2(b)(2), to give a certain supremacy to another, namely 35 U.S.C. § 120.

Third, and finally, the Court finds that the '094 Patent Application does not actually comply with the language of 35 U.S.C. § 120 with respect to its claimed priority date. The statute reads, in pertinent part, "No application shall be entitled to the benefit of an earlier filed application under this section unless an amendment containing the specific reference to the earlier filed application is submitted at such time during the pendency of the application *as required by the Director.*" 35 U.S.C. § 120 (emphasis added). In this case not only has the Director required, by way of the 1997 Regulation, that the '094 Patent Application contain in the first sentence of the specification a reference the each priority application, but the Director has also required, by way of the Patent Examiner's Office Action Summary, that in order to claim priority the '094 Patent Application, again, "must contain a specific reference to the prior application(s) in the first sentence of the specification (37 C.F.R. [§] 1.78)." As discussed, the '094 Patent Application failed in that regard, and, as such, the patent applicants failed to perform "as required by the Director" in violation of 35 U.S.C. § 120.

B. Compliance with the 1997 Regulation

Charter contends that IO Research failed to comply with the 1997 Regulation, the governing regulation, in claiming a priority date relating back to the 1993 PCT Application, and, as a result, the '094 Patent is invalid under 35 U.S.C. § 102(b).

Broadcast and IO Research first counter that the '094 Patent Application is both in compliance with the current regulations and it is consistent with the goals, if not the terms, of the then-governing regulation insofar as the application informs the Patent and Trademark Office that the applicant claims the benefit of the 1993 PCT Application date. Broadcast and IO Research also counter that invalidating the '094 Patent under 35 U.S.C. § 102(b) deprives the patent applicant "of a substantial property right" by exploiting the trivial and ignoring that which is vital and important.

First, the Court finds it irrelevant that the '094 Patent Application complies with the terms of the 2003 Regulation. Quite simply, the '094 Patent Application did not comply with the explicit "first sentence of the specification" requirement of the 1997 Regulation. The fact that the regulation was thereafter amended to omit that requirement, and the fact that the '094 Patent Application happened, then, to comply with the amended regulation, does not excuse the applicant's neglect; the Court cannot reward the patent applicant for such rule-making luck. Moreover, Broadcast and IO Research have not presented, and the Court is unable to find, any case law wherein a patent applicant's failure to abide by a past-governing regulation is excused by virtue of the patent applicant's

happenstance compliance with the terms of the newly amended regulation.

Second, as a corollary to the above, the Court finds it irrelevant that the '094 Patent Application comports with the goals, as opposed to the terms, of the 1997 Regulation. The Director of the Patent and Trademark Office found it necessary to require that patent applications make specific reference to all priority dates within the first sentence of the specification. As a result, and in the absence of any case law to the contrary, the Court is unwilling to excuse the '094 Patent Application's failure to comply with such a requirement. As alluded to above, to hold otherwise would directly undermine the very statutory authority delegated to the Patent and Trademark Office pursuant to 35 U.S.C. § 2(b)(2).

Third, and finally, the Court finds that invalidating the '094 Patent neither deprives Broadcast and IO Research of a substantial property right nor does it exploit the trivial and ignore that which is vital and important. Opposing summary judgment, Broadcast and IO Research cite again to the *Racing Strollers Inc.* case wherein the Federal Circuit quoted from Judge O'Connell's dissent in *In re Application of Campbell* stating:

> The Patent Office has here deprived appellant of a substantial property right by a process of reasoning which exploits the trivial and ignores that which is vital and important. The Supreme Court has recently reiterated the long established rule which governs here, namely, that "A party seeking a right under the patent statutes may avail himself of all their provisions, and the courts may not deny him the benefit of a single one.

> These are questions not of natural but of purely statutory right."

878 F.2d at 1421 (quoting 212 F.2d 606, 612 (C.C.P.A. 1954) (O'Connell, J., dissenting)) (citations omitted). As noted, however the *Racing Stroller Inc.* case neither addresses the language of the relevant administrative regulation nor does it concern an application error similar to the one at bar. On the contrary, the *Racing Stroller Inc.* case dealt exclusively with the distinction between "design" and "utility" patents and the priority dates relating thereto. True, our's is a priority date case, although we are confronted with a different issue – the force and effect of administrative regulations and failure to abide thereby. As such, the *Racing Stroller Inc.* language is not binding.

That being the case, however, the Court still finds that patent invalidation neither deprives Broadcast and IO Research of a substantial property right nor does it exploit the trivial and ignore that which is vital and important. First, Broadcast and IO Research have not presented, nor has the Court been able to find, any precedent establishing a property right in an invalid patent. It is counterintuitive to claim a substantial right in a property, in this case the '094 Patent, that does not actually exist in light of this Court's invalidity conclusion.

Second, the Court will not declare trivial the violation of a validly promulgated administrative regulation. As discussed, the Director of the Patent and Trademark Office found it necessary, if not vital and important, to require that all patent applications claiming priority dates makes specific reference within the first sentence of the specification. Again, it would undermine the Director's proper authority were this Court to find and conclude that the

'094 Patent Application's failure to comply with said requirement was likewise neither vital nor important. We will not engage in administrative second-guessing in this context.

As a result of the foregoing, the Court finds and concludes that there is clear and convincing evidence adequate to overcome the presumption of patent validity, and there are no genuine issues of material fact precluding summary judgment as to the '094 Patent's invalidity. The July 18, 1995 priority date claimed by the '094 Patent Application pursuant to the terms of the 1997 Regulation and as required by the Director is more than one year after the June 9, 1994 foreign publication date of the 1993 PCT Application, an application, it is not disputed, describing the same invention as that embodied in the '094 Patent, in direct violation of 35 U.S.C. § 102(b).

II. Certificate of Correction

To remedy an otherwise improper patent application, a patent applicant is entitled to apply for a certificate of correction. In that vein, federal law provides in relevant part:

> Whenever a mistake of a clerical or typographical nature, or of minor character, which was not the fault of the Patent and Trademark Office, appears in a patent and a showing has been made that such mistake occurred in good faith, the Director may, upon payment of the required fee, issue a certificate of correction, if the correction does not involve such changes in the patent as would constitute new matter or would require reexamination. Such patent, together with the certificate, shall have the same effect and operation

> in law on the trial of actions for causes thereafter arising as if the same had been originally issued in such corrected form.

35 U.S.C. § 255. Broadcast and IO Research remain free to file a request for a certificate of correction in order to correct the failure to make reference to prior patent applications, however that certificate will have only prospective application. *See Adrain v. Hypertech Inc.*, 2001 WL 740542 (D. Utah 2001); *see also Southwest Software Inc. v. Harlequin Incorporated*, 226 F.3d 1280 (Fed. Cir. 2000) (holding that the operative language of 35 U.S.C. § 254, the same operative language found in 35 U.S.C. § 255, requires that a certificate of correction is only effective for causes of action arising after it is issued).

Accordingly, and for the foregoing reasons, it is hereby,

ORDERED that the Motion and Memorandum In Support of the Motion of Defendant Charter Communications Inc. for Summary Judgment of Invalidity of U.S. Patent 6,076,094 shall be, and is, **GRANTED**.

ORDERED that Comcast Corporation's Motion for Summary Judgment of Invalidity of United States Patent No. 6,076,094, with which defendant Charter Communications Inc. joins, shall be, and is, **DENIED** as moot.

Dated this 3d day of ~~July~~ August, 2004.

/s/ Alan B. Johnson
ALAN B. JOHNSON
UNITED STATES DISTRICT
JUDGE SITTING BY
DESIGNATION

APPENDIX C

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

05-1008

BROADCAST INNOVATION, L.L.C.
and IO RESEARCH PTY LTD.,

Plaintiffs-Appellants,

v.

CHARTER COMMUNICATIONS, INC.

Defendant-Appellee,

and

COMCAST CORPORATION,

Defendant.

ORDER

A combined petition for panel rehearing and for rehearing en banc having been filed by the APPELLEE, and a response thereto having been invited by the court and filed by the APPELLANTS, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc and response having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for panel rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on November 15, 2005.

FOR THE COURT,

/s/ Jan Horbaly
Jan Horbaly
Clerk

Dated: November 8, 2005

cc: Jonathan T. Suder
Beth S. Brinkmann

BROADCAST INNOVATION V CHARTER COMM, 05-1008 (DCT – 03-CV-2223)

* *
* Note: Pursuant to Fed. Cir. R. 47.6, this *
* order is not citable as precedent. It is a *
* public record. *
* *

APPENDIX D

[LOGO] **UNITED STATES DEPARTMENT OF COMMERCE**
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/316,164	05-21/99	COHEN	5102-P-006

LM02/0920

NELSON D NOLTE
WALLENSTEIN & WAGNER LTD
311 SOUTH WACKER DRIVE
53RD FLOOR
CHICAGO IL 60606-6622

EXAMINER
HO. R

ART UNIT	PAPER NUMBER
2771	

DATE MAILED:

09/20/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	**Application No.** 09/316,614	**Applicant(s)** COHEN ET AL.	
	Examiner Ruay L. Ho	**Group Art Unit** 2771	

– **The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address –**

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 8-3-99 PRELIMINARY AMENDMENT.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits

is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 39,48-81 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☒ Claim(s) 39,48-53 is/are allowed.

☒ Claim(s) 54-55, 61-62, 68-69, 75-76 is/are rejected.

☒ Claim(s) 56-60, 63-67, 70-74, 77-81 is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119(a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 1 19(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3, 4

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

DETAILED ACTION

Priority

1. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78).

Claim Objections

2. Claim 55 is objected to because of the following informalities: 'the display on the television comprise' is grammatically incorrect. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 54-55, 61-62, 68-69, and 75-76 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 91/05436.

Regarding claim 54:

Each and every element of claim 54 are disclosed by WO 91/05436, note: the claimed 'a method for broadcasting data to a television set using a carrier signal such as a television or commercial radio carrier signal' is shown in page 1, paragraph 1;

the claimed 'constructing a data stream from the records of a transmission database' is shown in page 1, paragraph 3;

the claimed 'the database having individual first records, each first record comprising one of a selection of formats' is shown in page 1, paragraph 5;

the claimed 'at least one of the first records comprising executable program code or an object' is shown in page 2, paragraph 3;

the claimed 'broadcasting the data stream with the carrier signal' is shown in page 1, paragraph 1.

Regarding claim 55:

The claimed 'at least one first record comprises stream data and the display on the television comprise an audio presentation' is shown in page 1, paragraphs 1 and 3.

Regarding claim 61:

The claimed 'receiving a carrier signal and from it decoding a data stream to a user's database' is shown in page 4, paragraph 2;

claim 61 is rejected for the similar rationale given for claim 54.

Regarding claim 62:

Claim 62 is rejected for the similar rationale given for claim 55.

Regarding claim 68:

Claim 68 is rejected for the similar rationale given for claim 61.

Regarding claim 69:

Claim 69 is rejected for the similar rationale given for claim 55.

Regarding claim 75:

Claim 75 is rejected for the similar rationale given for claim 54.

Regarding claim 76:

Claim 76 is rejected for the similar rationale given for claim 55.

5. Claims 39, 48-53 are allowed.

6. Claims 56-60, 63-67, 70-74, and 77-81 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

In claim 39, the claimed 'each first record comprising one of a selection of formats, at least one of the first records comprising executable program code or an object' and 'the user's database having second records comprising at least some of the first records, the second records comprising one of a selection of formats and at least one record comprising executable program code or an object broadcast from the first records' are not disclosed, taught or suggested by any prior art. Claims 48-53 present further limitations.

In claim 56, the claimed 'at least one first record comprises index data and the display on the television comprises menus based on the index data' is not disclosed, taught or suggested by any prior art.

In claim 57, the claimed 'supplying a user's database with requested records, the requested records being the result of a return link established between a microprocessor which operates with the user's database and the transmission database, the return link established at least

in part via a telephone network' is not disclosed, taught or suggested by any prior art. Claim 58 presents further limitation.

In claim 59, the claimed 'the data steam comprises one or more data objects represented by information encoded in a first object and packet based protocol' is not disclosed, taught or suggested by any prior art. Claim 60 presents further limitation.

Claims 63-67 are objected to for the similar rationale given for claims 56-60.

Claims 70-74 are objected to for the similar rationale given for claims 56-60.

Claims 77-81 are objected to for the similar rationale given for claims 56-60.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruay L. Ho whose telephone number is (703) 305-3834. The examiner can normally be reached on Monday – Friday from 10 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black, can be reached on (703) 305-9707. The fax phone number for this Group is (703) 308-9051 or (703) 308-5403.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed

to the Group receptionist whose telephone number is (703) 305-3800.

/s/ Ruay Lian Ho
Ruay Lian Ho
Primary Examiner
Art Unit 2771

APPENDIX E

Attorney Docket No. 5102 P 006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re U.S. Patent Application Of:	
Thomas A. Cohen and Robert J. Chatfield	
Application No. 09/316,164	Group Art Unit: 2771
Filed: May 21, 1999	Examiner: R. Ho
For: "Distributed Database System and Receiver Therefor"	

Box Fee Amendment
Assistant Commissioner For Patents
Washington, D.C. 20231

REPLY TO OFFICE ACTION MAILED SEPTEMBER 20, 1999

Dear Sir:

In response to the Office Action mailed September 20, 1999, Applicants submit the following Amendments and Remarks. This Reply is being submitted with a one month extension of time, thereby extending the time to respond to January 20, 2000. This response is being mailed (January 20, 2000 and is therefore timely. Applicant respectfully requests the Examiner to reconsider the rejections made in the Office Action in view of the Amendments and Remarks made herein.

AMENDMENTS

Please amend the specification as follows:

After the title and before "Technical Field" please insert: – This application is a divisional of U.S. Patent Application Serial No. 09/054,896, filed April 3, 1998, now patented as U.S. Patent No. 5,999,934, which is a continuation of U.S. Patent Application Serial No. 08/436,336, filed July 18, 1995, now patented as U.S. Patent No 5,737,595 –

Please amend the claims as follows:

Claim 55, line 2, please delete "comprise" and insert therefor – comprises –

REMARKS

In the Application, claims 54-55, 61-62, 68-69 and 75-76 have been rejected as anticipated by International Patent Application WO 91/05436. Applicants respectfully traverse the Examiner's rejections for reasons detailed below. The Examiner has also noted that Applicants should add a reference to earlier filed applications and a grammatical error in claim 55. Applicants believe the amendments above correct these informalities. The Examiner has noted that claims 56-60, 63-67, 70-74 and 77-81 are allowable and that claims 39 and 48-53 have been allowed. Therefore, claims 54-55, 61-62, 68-69 and 75-76 are the only claims at issue in this response.

Rejections over International Patent Application No. WO 91/05436

The Examiner has rejected claims 54-55, 61-62, 68-69 and 75-76 as being anticipated by WO 91/05436 (the '436 application). Applicants respectfully traverse these rejection. Claims 54 and 75 each require, *inter alia*, "at least one of the first records comprising executable program code or an object." The Examiner's position is that the '436 application discloses this limitation at page 2, para. 3. However, Applicants submit that the cited paragraph does not disclose the limitation of "at least one of the first records comprising executable program code or an object." Although the cited paragraph does state that the "data . . . may be further acted upon by computer software within the personal computer so that logical decision and actions may be taken by the computer based on the contents of the recovered data" (see '436 application at page 2, para. 30), Applicants submit that the paragraph merely explains, as disclosed in the preferred embodiment of the '436 application at pages 9-11, the function disclosed in the application that many broadcast channels may be searched simultaneously and when selected data is found, the receiver will perform a function, such as further processing, display, or used for making logical decision "under the control of software codes stored in the memory." (See '436 application, page 6, final paragraph).

Nowhere in the '436 application is there a disclosure, nor even a suggestion, that the received data *itself* may be "executable program code or an object." As a result, Applicants submit that the subject matter of claims 54 and 75 is not disclosed, nor is it rendered obvious, by the disclosure of the '436 application.

Claims 55 and depends from claim 54 and, therefore, include the limitations of claim 54. As a result, claim 55 is patentable for the same reasons as claim 54. Claims 55 and 76 depend from claims 54 and 75, respectively, and therefore include the limitations of claims 54 and 75. As a result, claims 55 and 76 are patentable for the same reasons as claims 54 and 75.

Claims 61 and 68 each require the limitation of "at least one record comprising executable program code or an object." For the same reasons explicated with respect to claim 54, Applicants submit that the '436 application does not anticipate, nor render obvious, claims 61 or 68 because the '436 does not disclose, nor suggest, "at least one record comprising executable program code or an object." Claims 62 and 69 depend from claims 61 and 68, respectively, and therefore include the limitations of claims 61 and 69. As a result, claims 62 and 69 are patentable for the same reasons as claims 61 and 68.

Claim 61 similarly requires the limitation of "at least one record comprising executable program code or an object." For the same reasons explicated with respect to claims 54, Applicants submit that the '436 application does not anticipate, nor render obvious, claim 61 because the '436 does not disclose, nor suggest, "at least one record comprising executable program code or an object." Claim 62 depends from claim 61 and, therefore, include the limitations of claim 61. As a result, claim 62 is patentable for the same reasons as claim 61.

CONCLUSION

For the foregoing reasons, the Applicant respectfully submits that claims 54-55, 61-62, 68-69 and 75-76 are

patentable over the prior art of record, and are in condition for allowance. Accordingly, withdrawal of the rejections and allowance of the pending claims is respectfully requested.

Respectfully submitted,

/s/ Nelson D. Nolte

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Date: January 20, 2000

CERTIFICATE OF MAILING

I hereby certify that this document is being deposited with the United States Postal Service as first class mail in an envelope addressed to: BOX FEE AMENDMENT, Assistant Commissioner for Patents, Washington, D.C. 20231, on January 20, 2000.

/s/ Nelson D. Nolte

(86692)

APPENDIX F

35 U.S.C. § 120 provides:

§ 120. Benefit of earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application. No application shall be entitled to the benefit of an earlier filed application under this section unless an amendment containing the specific reference to the earlier filed application is submitted at such time during the pendency of the application as required by the Director. The Director may consider the failure to submit such an amendment within that time period as a waiver of any benefit under this section. The Director may establish procedures, including the payment of a surcharge, to accept an unintentionally delayed submission of an amendment under this section.

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35 U.S.C. § 120 (1999) provides:

§ 120. Benefit of earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

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37 C.F.R. § 1.78 provides in part:

§ 1.78 Claiming benefit of earlier filing date and cross-references to other applications.

* * *

(a)(2)(i) Except for a continued prosecution application filed under Sec. 1.53(d), any nonprovisional application or international application designating the United States of America claiming the benefit of one or more prior-filed copending nonprovisional applications or international applications designating the United States of America must contain or be amended to contain a reference to each such prior-filed application, identifying it by application number (consisting of the series code and serial number) or international application number and international

filing date and indicating the relationship of the applications. Cross references to other related applications may be made when appropriate (see Sec. 1.14).

* * *

(iii) If the later-filed application is a nonprovisional application, the reference required by this paragraph must be included in an application data sheet (Sec. 1.76), or the specification must contain or be amended to contain such reference in the first sentence(s) following the title.

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37 C.F.R. § 1.78 (July 1, 1999) provides in part:

Sec. 1.78 Claiming benefit of earlier filing date and cross-references to other applications.

* * *

(a)(2) Except for a continued prosecution application filed under Sec. 1.53(d), any nonprovisional application claiming the benefit of one or more prior filed copending nonprovisional applications or international applications designating the United States of America must contain or be amended to contain in the first sentence of the specification following the title a reference to each such prior application, identifying it by application number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications. The request for a continued prosecution application under Sec. 1.53(d) is the specific reference required by 35 U.S.C. 120 to the prior application. The identification of an application by application number under this section is the specific reference required by 35 U.S.C. 120 to every application

assigned that application number. Cross-references to other related applications may be made when appropriate (see Sec. 1.14(a)).

APPENDIX G

Pursuant to Rule 33(c) of the Rules of the Supreme Court, the patent documents are contained in a separately bound Supplemental Appendix, 57a-82a.

RECORDS AND BRIEFS

Supreme Court, U.S.
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No. 05-

In The Supreme Court of the United States

CHARTER COMMUNICATIONS, INC.,

Petitioner,

v.

BROADCAST INNOVATION, L.L.C.,
IO RESEARCH PTY LTD.,

Respondents.

On Petition For Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

APPENDIX G TO PETITION FOR A WRIT OF CERTIORARI

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United States Patent [19]

Cohen et al.

[11] **Patent Number: 6,076,094**

[45] **Date of Patent: Jun. 13, 2000**

[54] **DISTRIBUTED DATABASE SYSTEM AND DATABASE RECEIVED THEREFOR**

[75] Inventors: **Thomas Andrew Cohen**, Cottesloe; **Robert Jeffries Chatfield**, Leederville, both of Australia

[73] Assignee: **Ie Research Pty. Limited**, Australia

[21] Appl. No.: **09/316,164**

[22] Filed: **May 21, 1999**

Related U.S. Application Data

[62] Division of application No. 08/854,896, Apr. 3, 1998, Pat. No. 5,999,934, which is a continuation of application No. 08/436,336, Jul. 18, 1995, Pat. No. 5,737,595.

[51] Int. Cl.[7] G06F 17/30

[52] U.S. Cl. 707/104; 370/396; 370/397; 370/404; 370/474

[58] Field of Search 707/1–10, 100–104, 707/200–206; 370/396, 397, 404, 474

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,696,297	10/1972	Ozno .	
4,473,824	9/1984	Claytor .	
4,677,552	6/1987	Sibley, Jr. .	
4,695,880	9/1987	Johnson et al. .	
4,700,378	10/1987	Brown .	
4,706,121	11/1987	Young .	
4,725,886	2/1988	Gabenbeck et al. .	

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

0 379 252 A1	7/1990	European Pat. Off. .
0 475 275 A1	3/1992	European Pat. Off. .
0 475 275 A2	3/1992	European Pat. Off. .
0 477 786 A2	4/1992	European Pat. Off. .
0 491 068 A1	6/1992	European Pat. Off. .
0 513 925 A2	11/1992	European Pat. Off. .
0 556 701 A2	8/1993	European Pat. Off. .

(List continued on next page.)

OTHER PUBLICATIONS

Adeyeye, A. et al., "Development and Performance of the PBS VBI Data Delivery System," *SMPTE J.*, 1988, 97(6), 470–473.

Brüggemann, H., "DAVIC-Spezifikationen für digitale audiovisuelle und multimediale Dienste," *Der Fernmeldeingenieur*, Apr./May 1997, 51 Jg., H. 4, S. 2–63 (English Summary included).

(List continued on next page.)

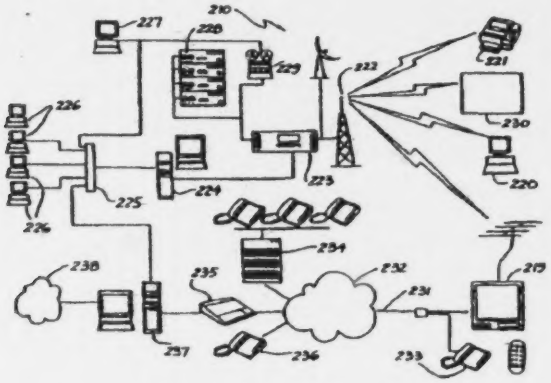
Primary Examiner—Ruay Lian Ho

Attorney, Agent, or Firm—Wallenstein & Wagner, Ltd.

[57] **ABSTRACT**

A method for broadcasting data to a television set using a carrier signal such as a television or commercial radio carrier signal composed of the steps of: constructing a data stream from individual first record of a transmission database, each first record comprising one of a selection of formats, at least one of the first records comprising executable program code or an object, broadcasting the data stream within the carrier signal, providing a user with a user's device for receiving and decoding the data stream, the user's device receiving and decoding the data stream to a user's database, the user's database having second records comprising at least some of the first records, the second records comprising one of a selection of formats and at least one record comprising executable program code or an object broadcast from the first records determining the format a second record using a control program running, when required, the executable program code, and generating a display on the television consistent with the format determined by the control program.

35 Claims, 12 Drawing Sheets



U.S. PATENT DOCUMENTS

4,748,912	6/1988	Whitaker .
4,785,559	5/1988	Wilds et al. .
4,791,578	6/1988	Reher et al. .
4,845,658	7/1989	Gifford .
4,862,268	8/1989	Campbell et al. .
4,868,866	9/1989	Williams, Jr. .
4,887,308	12/1989	Dutton .
4,977,455	12/1990	Young .
4,989,230	1/1991	Gillig et al. .
5,010,499	4/1991	Yee .
5,019,963	5/1991	Alderson et al. .
5,036,518	7/1991	Tseung .
5,038,211	8/1991	Hallenbeck .
5,038,374	8/1991	Kaufman et al. .
5,047,867	9/1991	Strubbe et al. .
5,063,610	11/1991	Alvarado .
5,078,404	12/1991	Bullock et al. .
5,088,108	2/1992	Uddenfeldt et al. .
5,099,422	3/1992	Foresman et al. .
5,140,419	8/1992	Galliherick et al. .
5,161,109	11/1992	Keating et al. .
5,166,886	11/1992	Molnar et al. .
5,181,113	1/1993	Chang .
5,210,611	5/1993	Yee et al. .
5,212,684	5/1993	MacNamee et al. .
5,214,792	5/1993	Alvarado .
5,223,924	6/1993	Strubbe .
5,235,680	8/1993	Bijnagte .
5,239,540	8/1993	Rovira et al. .
5,245,429	9/1993	Virginio et al. .
5,247,575	9/1993	Sprague et al. .
5,262,860	11/1993	Fitzpatrick et al. .
5,281,962	1/1994	Vanden Heuvel et al. .
5,283,639	2/1994	Esch et al. .
5,337,237	7/1994	Gordes et al. .
5,337,554	7/1994	Polanyi, III et al. .
5,339,367	10/1994	Roehili .
5,557,333	9/1996	Jungo et al. .
5,560,038	9/1996	Haddock .
5,594,911	1/1997	Cruz et al. .
5,604,867	2/1997	Harwood .
B1 4,706,121	12/1921	Young .

FOREIGN PATENT DOCUMENTS

3418618 C2	11/1987	Germany .
4338023 A1	5/1995	Germany .
4342775 A1	6/1995	Germany .
63-67887	4/1988	Japan .
63-214090	9/1988	Japan .
1-296881	11/1989	Japan .
1-316080	12/1989	Japan .
4-28295	1/1992	Japan .
4-502530	5/1992	Japan .
2 183 376	6/1987	United Kingdom .
2 223 150	3/1990	United Kingdom .
2 231 470	11/1990	United Kingdom .
WO 85/02082	5/1985	WIPO .
WO 91/05436	4/1991	WIPO .
WO 92/22864	12/1992	WIPO .
WO 93/09631	5/1993	WIPO .
WO 94/13070	6/1994	WIPO .

OTHER PUBLICATIONS

Cantell, S., "Professional Data Broadcasting the New Wave in Information and Communications Technology," *Conference Title: EuroComm 88: Proceedings of the International Congress*, 1989, 169–188.

Cantell, S., "Databroadcasting and beyond," *Telecommunications (International Edition)*, 1990, 24(7), 63–64, 67.

Forster, B., "Data broadcasting into the 1990's: a special report," *Inform. Media & Technol.*, 1991, 23(2), 67–68.

Gifford, D.K. et al., "The Application of Digital Broadcast Communication to Large Scale Information Systems," *IEEE J. Sel. Areas Commun.*, 1985, SAC-3(3), 457–467.

James, A., "ORACLE—Broadcasting the Written Word," *Wireless*, 1973, 314–318.

Lockwood, R., "FM sidebands: tuning in Wall Street," *Personal Computing*, 1990, 14(4), 80–84.

Lopinto, J.J., "Television applications and transmission of digital data in the vertical blanking interval," *International Telemetering Conference*, 1980, 345–349.

McKenzie, G.A., "ORACLE—An Information Broadcasting Service Using Data Transmission in the Vertical Interval" *J. SMPTE*, 1974, 83, 6–10.

Rath, K. et al., "Interactive Digital Video Networks: Lessons from a commercial Deployment," *IEEE Commun. Mag.*, 1997, 70–74.

Richards, T. et al., "The interactive island: Singapore's Teleview System," *IEE Review*, 1991, 259–263.

Segal, D.A. et al., Boston Community Information System User's Manual, (Version 8.17), 1986, pp. 1–10, 12–22, 27–32, 45–48.

Deutsches Patentamt, Search Report dated Jan. 29, 1988, 2 pages.

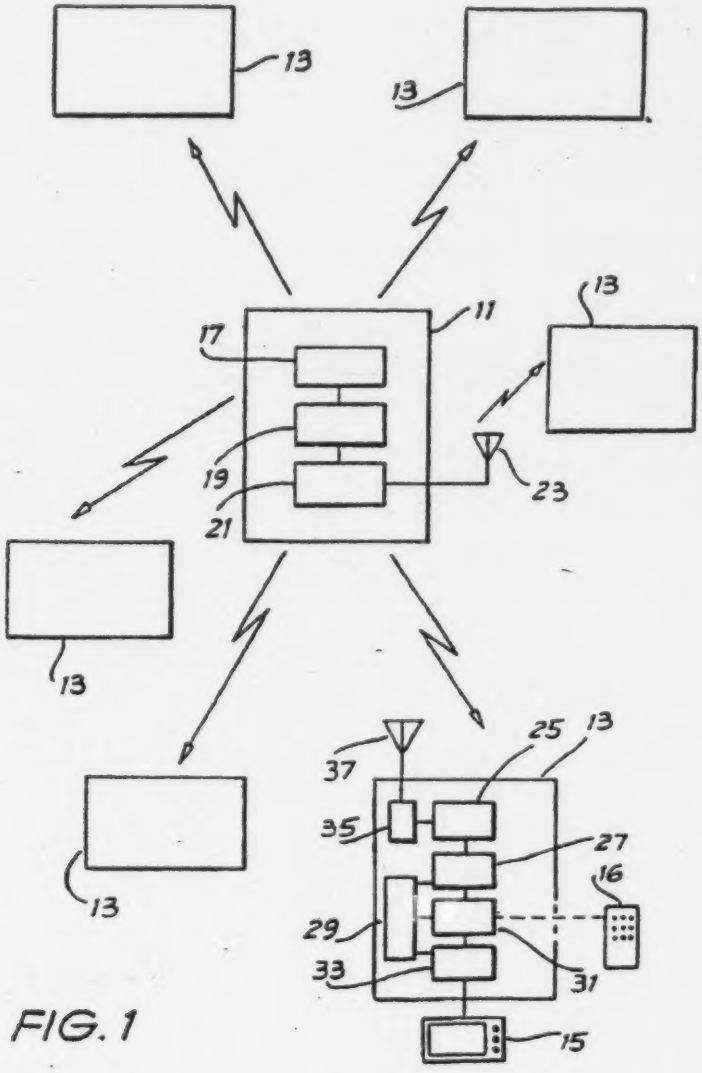


FIG. 1

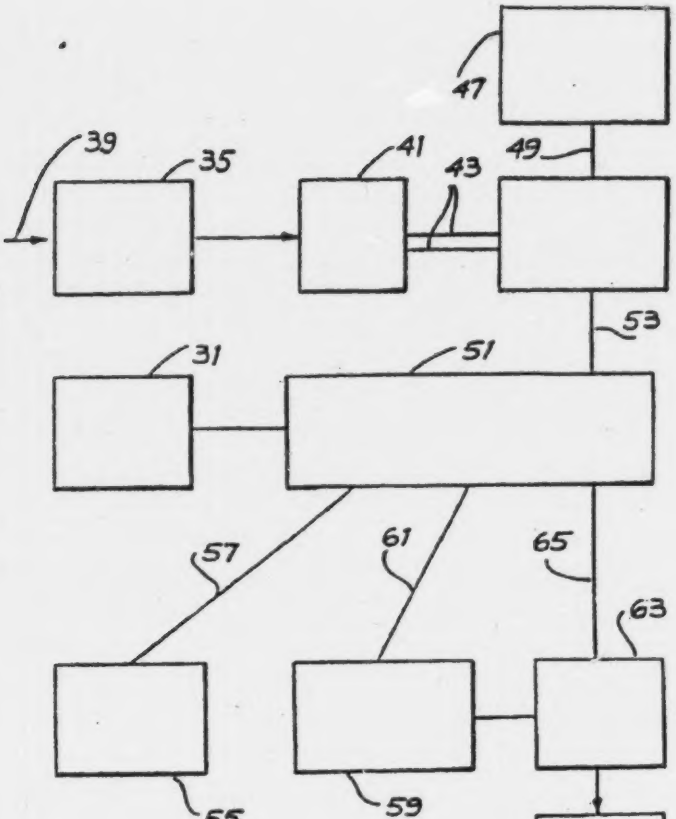


FIG. 2

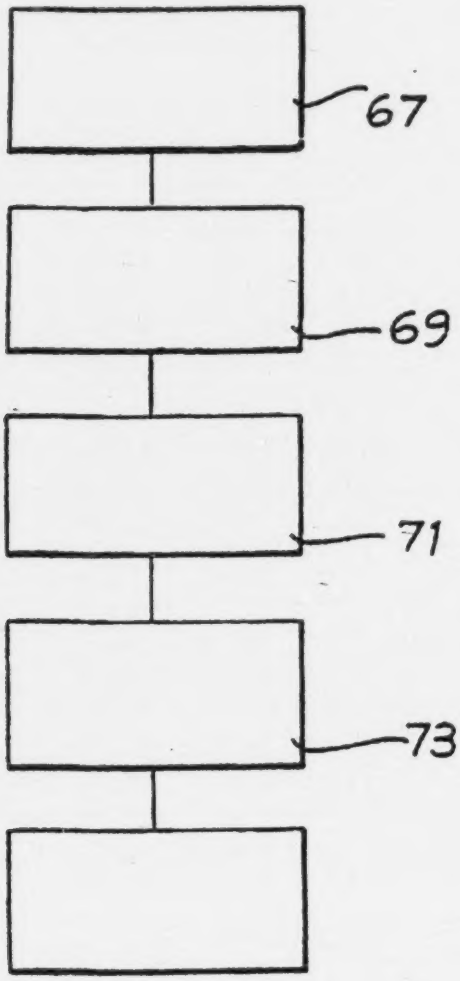


FIG. 3a

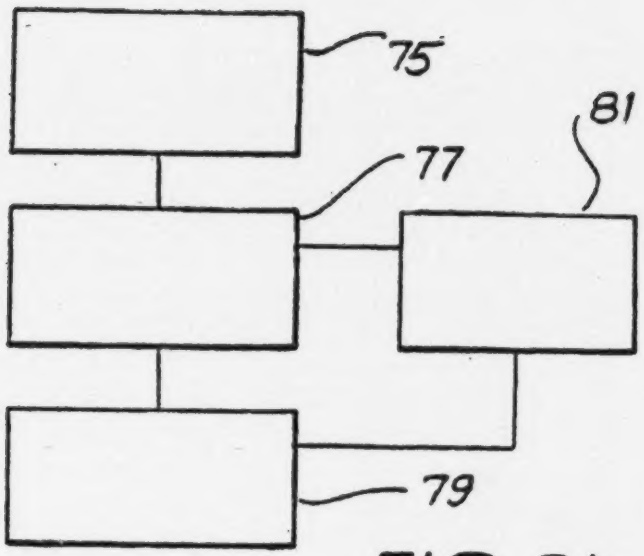


FIG. 3b

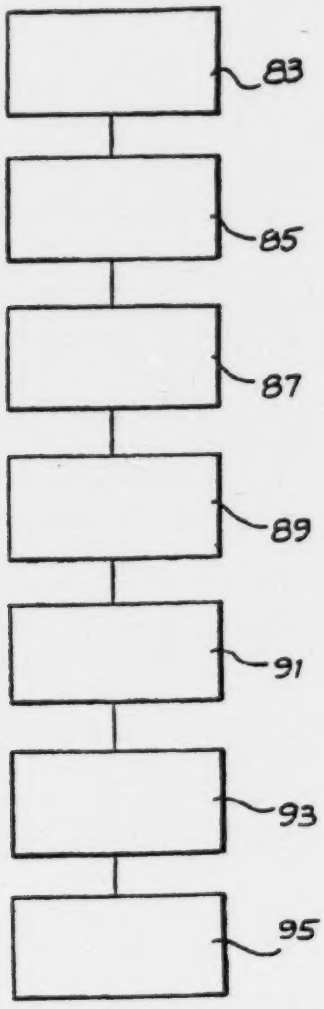


FIG. 3c

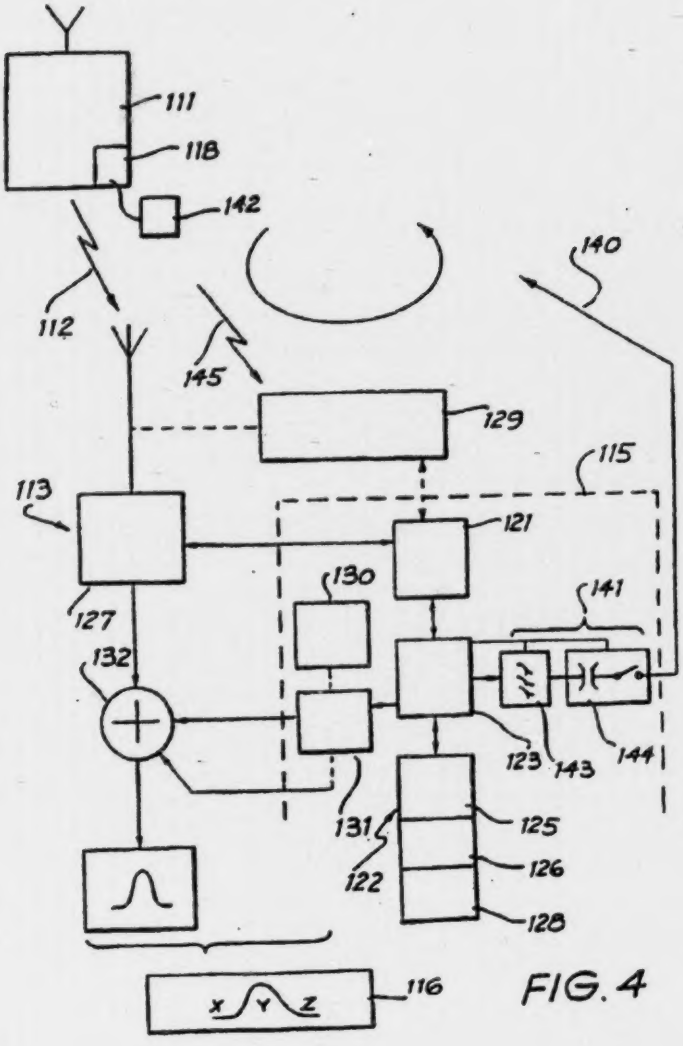

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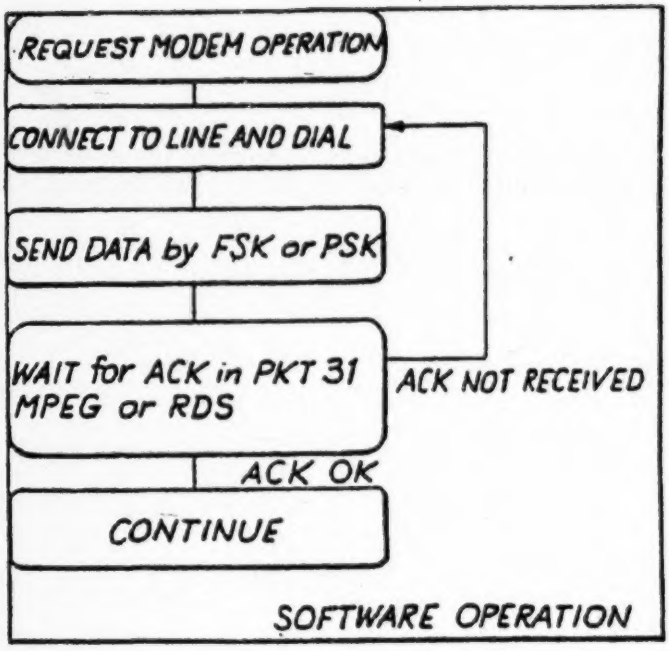
FIG. 4


REQUEST MODEM OPERATION
CONNECT TO LINE AND DIAL
SEND DATA by FSK or PSK
WAIT for ACK in PKT 31 MPEG or RDS
ACK NOT RECEIVED
ACK OK
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SOFTWARE OPERATION

FIG. 5

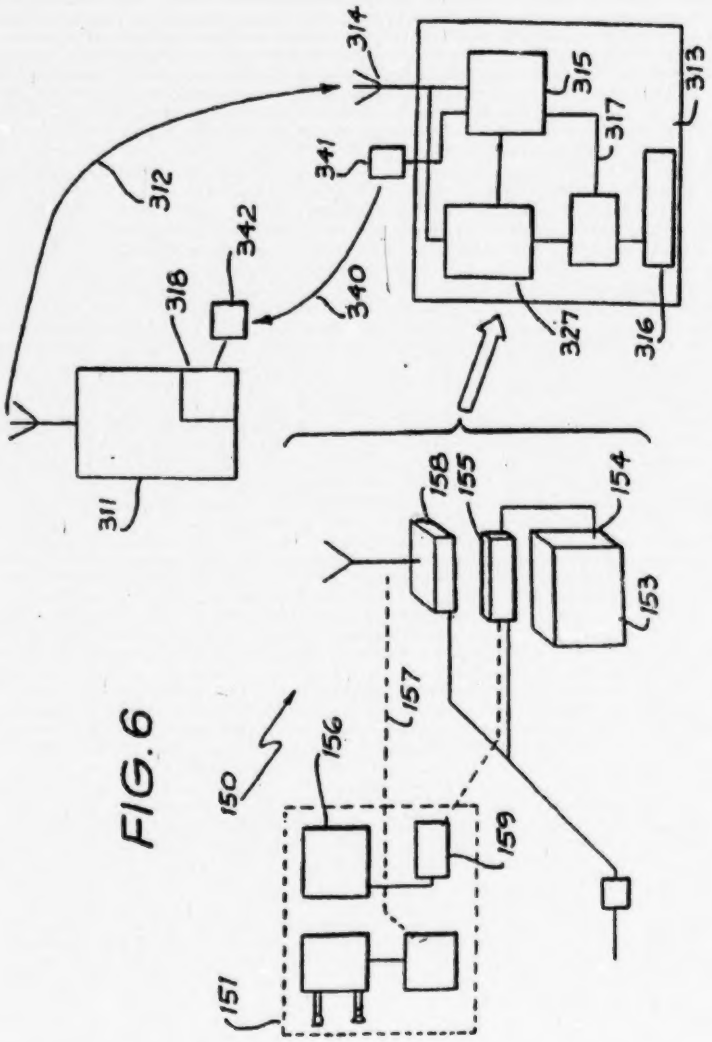
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FIG. 6

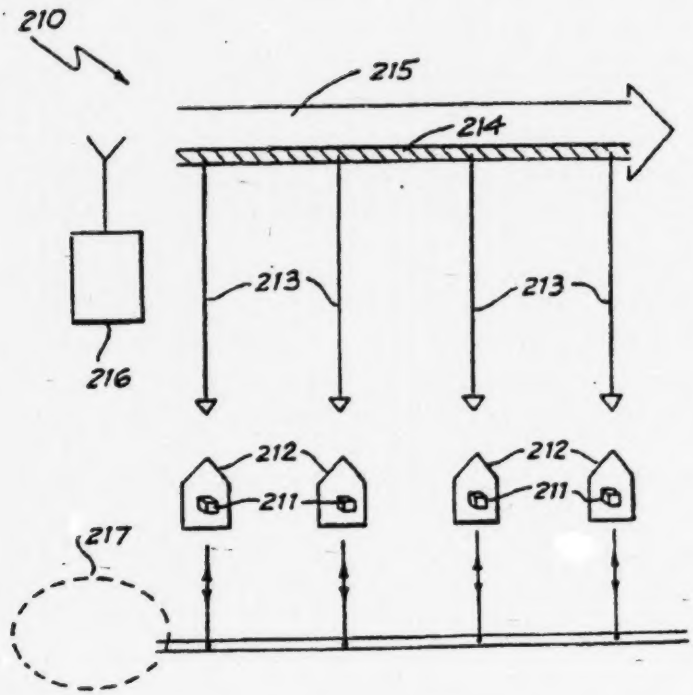

FIG. 7

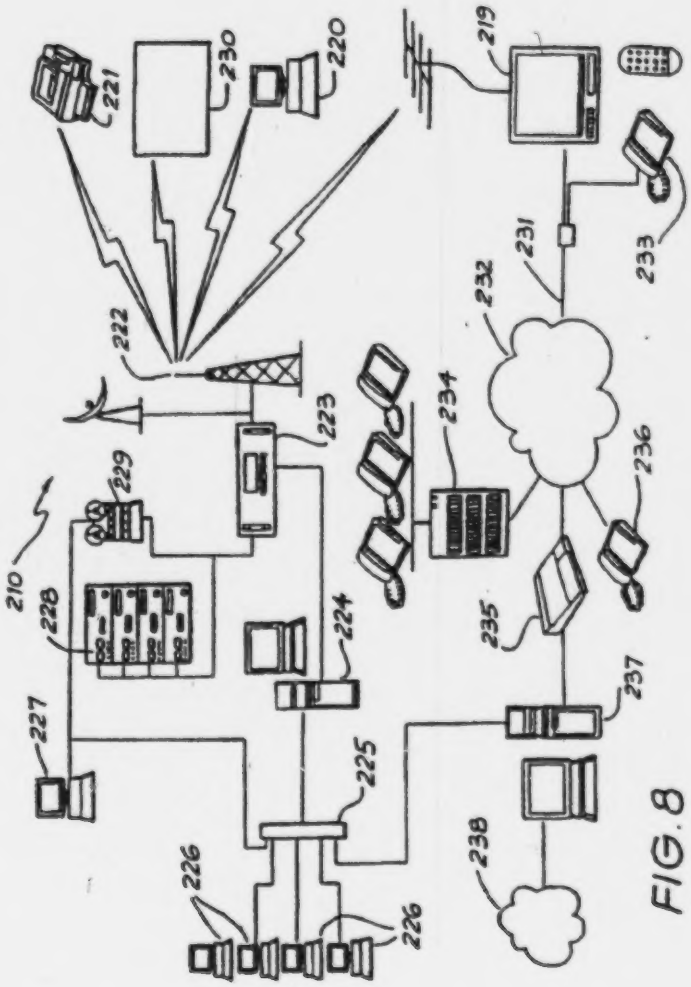
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FIG. 8

FIG. 9A

FIG. 9B

FIG. 9C

FIG. 9D

FIG. 9E

FIG. 9F

FIG. 9G

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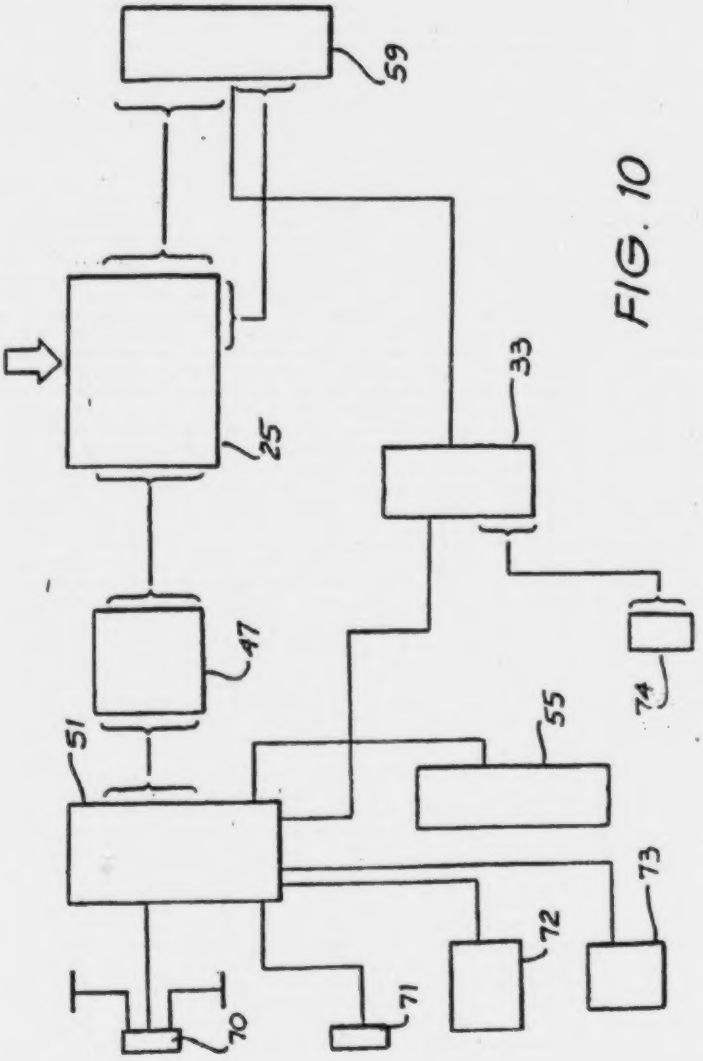

FIG. 10

DISTRIBUTED DATABASE SYSTEM AND DATABASE RECEIVER THEREFOR

This application is a divisional of U.S. patent application Ser. No. 09/054,896, filed Apr. 3, 1998, now patented as U.S. Pat. No. 5,999,934, which is a continuation of U.S. patent application Ser. No. 08/436,336, filed Jul. 18, 1995, now patented as U.S. Pat. No. 5,737,595.

TECHNICAL FIELD

This invention relates to a distributed database system and database receiver therefor, which has particular, but not exclusive, applicability to data broadcasting or datacasting communications media.

BACKGROUND ART

The closest system known to the applicant is a system often referred to as "teletext". The teletext system utilizes the vertical blanking interval (VBI) of a television transmission for the purposes of broadcasting predetermined blocks of text material. The blocks of text are organized as pages where each page provides one screen of text material. The text format for each page is fixed as are the total number of pages of text material. The pages are broadcast repeatedly consecutively. Noted defects of this kind of system include the rigidity of the text in its page format and also the significant delays that can be encountered whilst a user waits for a requested page to come around to its time for re-transmission.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a system by which a database can be distributed from a central station with thematically linked data to one or more users at remote locations and where the user can autonomously group the received data for interpretation according to the demands of the user in an efficient and fast manner compared with prior art systems. channel capacities.

Throughout this specification the term "data" is to be interpreted broadly to include all forms of information, whether it is to be output to the user as text, graphics, video, audio and whether the data is for the purposes of presentation to the user or whether the data has a functional purpose or computational purpose e.g. forms part of a system header, a system programme component or the like.

Similarly, the term "database" is to be interpreted broadly as a general source and/or repository, however accessible, of data as defined in its broadest form above.

In accordance with one broad aspect of the present invention, there is provided a distributed database system comprising:

central station for accumulating and distributing data on a database; and

a plurality of receiver stations for receiving said data and selectively making available at least portions of said data in accordance with the demands of a user of a said receiver station;

wherein said central station comprises: a data store for storing accumulated data from said database for constituting a database, ready for distribution; processing means for extracting said data from said data store and generating a sequential data stream therewith for distribution; and transmission means for encoding and transmitting said sequential data stream; and

a said receiver station comprises: decoder means to receive and decode transmitted data so as to reconstitute said data therefrom; input means for a user of said receiver station to input user commands in respect of the demands of the user to said receiver station; receiver processing means for constituting a database from said data having regard to said user commands; memory means for storing data for constituting said database; and means for communicating selected data in direct response to said user commands.

In accordance with another aspect of the present invention, there is provided a database receiver for a distributed database system of the type defined in the preceding aspect of the invention comprising:

decoder means to receive and decode data transmitted to the database receiver to reconstitute database data therefrom;

input means for receiving and processing user commands input by a user of said database receiver in respect of the demands of the user;

receiver processing means for constituting a database from said data having regard to said user commands;

memory means for storing data for constituting said database; and

means for communicating selected data from said constituted database in direct response to said user commands.

In accordance with another aspect of the invention there is provided a method for providing a distributed database for access and searching by a user comprising:

accumulating and distributing data from the database to a plurality of users;

receiving and analysing the data in accordance with the demands of the user for selective storage of the data;

searching the stored data in response to a user command having regard to the demands of the user; and

communicating selected stored data conforming to the demands of the user, to the user.

In accordance with a further aspect of the invention, there is provided a method for receiving distributed database data and selectively communicating the same to a user comprising:

receiving and decoding distributed data to reconstitute database data therefrom;

receiving and processing user commands representative of the demands of a user;

constituting a database from the database data having regard to the user commands;

storing selected database data for the constituted database; and

communicating selected database data from the constituted database in direct response to the user commands to the user.

In a further broad form of the invention, there is provided a distributed database system comprising a primary database which is in communication via communication means with a plurality of remote subscriber stations; each remote subscriber station including storage means adapted to store at least a selected portion of said primary database, each said station further including data processing means adapted to process information stored in said storage means.

In a further broad form of the invention there is provided a distributed database system comprising at least a primary database in communication via communication means with a plurality of remote receiver stations; each remote receiver station including storage means adapted to store at least a selected portion of said primary database, each said receiver

station further including data processing means adapted to process information stored in said storage means.

In a preferred form said system further includes input means for a user of a said receiver station and wherein said data processing means processes information contained in data sent from said at least primary database and also processes information received from said input means in order to determine which portions of said data and in what manner said portions of said data are to be presented to said user by said receiver station.

In a further broad form of the invention there is provided a remote receiver station for use with the distributed database system, said receiver station further including input means for a user and wherein said data processing means processes the information contained in data received from one or more sources of data and also processed information received from said input means in order to determine which portions of said data and in what manner said portions of said data are to be presented to said user by said receiver station.

BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the invention will now be described with reference to the accompanying drawings wherein:

FIG. 1 is a schematic block diagram of a distributed database system according to a first embodiment of the invention;

FIG. 2 is a schematic block diagram of the hardware comprising the database receiver disposed at a receiver station of FIG. 1;

FIGS. 3a, 3b 3c are flowcharts showing the method of operation of the database receiver of FIG. 2 in accordance with appropriate operating software programmed into the receiver processor, where:

FIG. 3a is a flowchart showing the method of operation of the decoder means;

FIG. 3b is a flowchart showing the method of operation of the receiver processing means; and

FIG. 3c is a flowchart showing the method of operation of the input means and the means for communicating selected database data;

FIG. 4 is a block diagram of a further example of the system of FIG. 1 including a modem return link interface to a TV multimedia display processor,

FIG. 5 is a flow chart of the operation of the modem return link of FIG. 4,

FIG. 6 is a block diagram of a further example of the system of FIG. 1 incorporating a cordless telephone handset,

FIG. 7 is a concept diagram for a system according to the invention incorporating a return link and more than one source of input data for the receiver stations.

FIG. 8 is a block system diagram of a detailed implementation of the system of FIG. 7.

FIGS. 9A–9D comprise schematic block diagrams of an object oriented packet structure for transmission of data adapted for use in conjunction with any one of the examples of the distributed database system of the invention, and

FIG. 10 is an electrical schematic diagram of the receiver of FIG. 8.

DESCRIPTION OF PREFERRED EMBODIMENTS

The distributed database system of FIG. 1 is directed towards a distributed database system in the form of a datacast network and includes a plurality of database receivers which form part of the network.

As shown in FIG. 1 of the drawings, the distributed database system 10 comprises a central station 11 for accumulating and distributing data for a database, the central station being for example a television broadcast station, and a plurality of receiver stations 13, which are specially adapted to include a database receiver for receiving the broadcast data from the central station 11 and selectively communicating the data in a database format to a user located at the receiver station in accordance with the demands of the user.

The datacast network utilizes television signals to convey digital information for text display at the receiver stations. In this respect, the central station 11 generates a stream of data which is encoded into datacast packets as defined by the World Standard Teletext specification and know as Packet 31 data. This data stream is inserted into the vertical blanking interval (VBI) of the television broadcast signal transmitted from the central station 11 and is subsequently broadcast over the ether to be received by the receiver stations 13 at which are located display screens 15, such as television receiver sets or video monitors on which selected groups of received information can be displayed, and remote user interface devices 16, such as keypad controllers or the like.

The central station 11 for the purposes of datacasting generally comprises a data store in the form of a computer file server 17 which is adapted to accumulate and store data in the form of digital records to form the database.

The file server 17 is connected to a processing means in the form of a data broadcast inserter. The inserter 19 is adapted to extract digital records in the form of database data from the file server 17 and generate a sequential data stream from this database data for distribution to the receiver stations. Importantly, the inserter is adapted to insert this data stream into the VBI of the broadcast television signal. This combined signal is passed on to a transmission means 21 which includes appropriate modulation and transmission circuitry for encoding and transmitting the sequential data stream via an antenna 23 in accordance with conventional broadcasting practice.

In conceptual terms, the database receiver at a receiver station 13 generally comprises decoder means 25, receiver processing means 27, memory means 29, input means 31 and means for communicating selected database data 33.

The decoder means 25 is connected to an input system 35 such as a TV tuner which is connected to a receiving antenna 37 for the purpose of receiving transmitted data broadcast from the central station 11. The decoder means is particularly designed, to decode the transmitted data so as to reconstitute the database from the transmitted data.

The receiver processing means 27 is designed to reconstitute a database from reconstituted database data and store the same within an appropriate memory location of the memory means 29.

The input means 31 is associated with the remote control receiver interface 16 which is provided with a keypad for issuing user commands and database search parameters to the input means 31 when operated by the user. The remote control interface 16 uses an infrared communication link with the input means 31 in accordance with conventional design practice for interfaces of this kind.

The input means 31 is adapted to access and extract selected communicable data stored within the memory means 29 for storage within another location of the memory means 29 in direct response to the user commands.

The means 33 for communicating is designed to simply display the communicable data stored within the other location of the memory means 29 on the display screen 15, which is directly connected thereto pursuant to the user commands.

An important consideration in this embodiment with respect to the database data which is broadcast from the central station 11 to the receiver stations 13 is that no assumptions are made about the nature of the information that is to be distributed, except that an individual element of the data may have some relationship to other data elements which is perceivable to the user.

Consequently, this property of the data may allow it to be dynamically grouped in relationships which are perceived by the user and hence can be acted upon by the issuance of a search command by the user at the receiver station. Importantly, the groupings are not fixed in advance at the central station, but rather are determined by user choice and operation of the remote control interface 116 at the receiver station end. Thus, it is at the database receiver and that the database is constituted in response to the user demands, whereby the database receiver is adapted to receive, maintain, store and calculate the relationships between database data broadcast to it from the central station.

Each logical element of information which is broadcast is called a data entry and may consist of any number of characters. These characters are delivered by the user data portion of a datacast packet as defined by the World Standard Teletext specification.

Now more particularly describing the components of the database receiver, reference is made to FIG. 2 of the drawings.

As shown, the transmitted data signal as represented by the arrow 39 is received by the antenna 37 and applied to the input system 35 from which the video signal carrying the database data is passed to a data acquisition means in the form of a video input processor 41 forming part of the decoder means 25. The video input processor 41 is of conventional design for extracting a serial data stream from the video signal, as defined in the World Standard Teletext specification, and to reconstruct a Teletext clock which is as a synchronising signal used for further processing of the serial data stream. The serial data stream and Teletext clock signals are passed via appropriate bus lines 43 to a "packet 31" data broadcast decoder 45 which also forms part of the decoder means 25. The packet decoder 45 is again of conventional design to conform to the World Standard Teletext specification and is adapted to accept the data stream and Teletext clock signals and perform a low level translation of the serial data stream into byte wide data which in turn is passed into a buffer comprising a first in first out (FIFO) memory 47 via a high speed bidirectional data bus 49.

The packet decoder 45 is constructed from a variety of embedded processors using very large-scale integrated (VLSI) circuits, gate arrays and other processor technologies.

The FIFO memory 47 is required to provide a continuous output data stream of database data from the sporadic input data stream which comprises bursts of packets of data decoded from the VBI of the transmitted data signal. The packets of data consist of characters that represent database data and other special data broadcasting information. The special data broadcasting information includes framing codes, data channel groups and cyclic redundancy checksums. Accordingly, it is only the database data which is used for the purposes of constituting the database and which is further processed by the database receiver, the other special data broadcast information being provided to enable correct processing of the database data in accordance with standard data communications.

A central processing unit 51 is connected to the packet decoder 45 via a high bandwidth bus. The CPU 51 provides the principle computing element of the database receiver and thus forms part of the decoder means 25, receiver processing means 27, input means 31 and the means 33 for communicating.

The CPU 51 interacts with the memory means 29 as part of its operations as the receiver processing means 27, input means 31 and the means 33 for communicating. The memory means 29 is divided into two memories, one being a large database memory 55 which is connected to the CPU 51 via a high speed bus 57 and the other is a communication memory 59 which is also connected to the CPU 51 by a discrete high speed bus 61.

Operation of the CPU 51 forms part of the decoder means 25 by including the construction of a data stream which is restricted to reconstituting database data only. The CPU 51 continuously reads database data from the FIFO memory 47 when data is available in the FIFO and makes that data available for further processing by the receiver processing means 27 by transfer means.

The database data which is processed by the CPU 51 in its operation as the receiver processing means 27 is actually divided into displayable records of the constituted database and index data relating these records. The database memory 55 is used to store a prescribed number of the displayable records and the associated index data thereof in a separate table which is used for searching and retrieving the displayable records.

In its operation as the receiver processing means 27, the CPU 51 includes a number of software programmes which perform discrete processes in respect of the stream of reconstituted database data received from the transfer means. Moreover, the receiver processing means includes further decoder means to examine the stream of reconstituted database data and to extract index data therefrom, and database handling means to determine the storage of individual database data in accordance with the prescribed algorithm. This algorithm generally involves the database handling means to store individual data entries of database data at a requisite storage location in the database memory 55 so as to constitute a database and to perform prescribed contingency action involving changing the structure of the database continuously in response to new incoming database data having regard to the user demands. The operation of the receiver processing means 27 will be described in more detail later.

In its operation as part of the input means 31, the CPU 51 provides the processing for the input means 31 in relation to the searching and retrieving of the displayable records stored within the database memory 55 by the receiver processing means 27. These processing functions are performed in accordance with a software programme and will be described later.

The input means 31 includes appropriate interface decoding circuitry (not shown) for receiving user commands signals input thereto by the remote control interface 16, which is connected to the CPU 51 for direct processing in accordance with the aforementioned software programme.

The means 33 for communicating selected database data of the database constituted by the receiver processing means

27 includes a character generating means 63 to generate characters for displaying on the display screen 15 in respect of the displayable record stored in the communication memory 59. Accordingly, the communication memory 59 stores selected displayable data records retrieved from the database memory 55 in accordance with the user commands input by the user under the operation of the input means 31. This memory mirrors the information which is displayed on the display screen 15, whereby the data stored therein under operation of the CPU 51 is read by the character generating means 63 in accordance with the control signals input thereto via bus line 65 from the CPU 51. The character generating means 63 is of conventional design being used to produce the actual character display signals for the display screen 15.

As indicated above the operation of the database receiver is determined by the software programmed into the CPU 51 which now will be described generally with reference to the flowcharts shown in FIG. 3 of the drawings.

The operation of the database receiver is divided into three main areas. The first of these is to operate the decoder means 256 to receive and process information broadcast to it from the central station 11. The second of these is to operate the receiver processing means 27 to control the storage of this information to constitute a database within the database receiver. The third of these is to operate the input means 31 to enable the extraction of information from this database for the purposes of communication by means of visual display in accordance with the direct demands of the user and to operate the means 33 for communicating the selected records from the database. These three main functional areas all operate concurrently and continuously with each other to provide for optimum efficiency and speed from the user viewpoint.

With respect to the first area, reference is made to FIG. 3a of the drawings which shows the order in which the data reception functions occur.

When processing is commenced several memories need to be initialised and data paths set up to allow the reception of data. Accordingly, as represented at block 67, the software initialises the FIFO memory 47, the parameters of the database memory 55 and communication or screen memory 59 and the video extraction circuits of the video input processor 41.

Once the memories are set up, an embedded loop for the acquisition of data is entered as represented by block 69 for receiving the "packet 31" packets of data from the video input processor 41. This loop also reconstitutes the "packet 31" data as represented by block 71 into a stream of database data from which the special data broadcast information is filtered out for processing by the receiver processing means 27. This stream of database data is then passed onto the second area of operation, as represented by block 73.

With respect to the second area, reference is made to FIG. 3b of the drawings which shows the order in which the further decoding and data handling functions occur. The receiver processing means 27 receives the serial database data resulting from the data reception process and processes this data to construct the database. Moreover, the resultant stream of database data is examined so that the displayable records and the index data are separately extracted as represented at block 75.

The storage of extracted individual database data is then determined in accordance with the prescribed algorithm since the database memory, although large, is limited in size and hence cannot store every displayable record which is broadcast and received by the database receiver. Thus, the algorithm is required to calculate which records that have already been stored within the database memory 55 can be deleted and overwritten by new database data. The main parameter of the algorithm for determining the replacement of database data is the particular thematic link of the displayable record of the database data entry to a set of database search parameters which have been input with the user commands by a user using the remote control interface 16.

As represented by block 77, the algorithm proceeds with the database handling means determining whether there is any free space available in the database memory 55 for storing displayable records and the index data thereof. If space is available, then the individually extracted displayable records and index data therefor from the incoming database data entry stream is stored in the database memory as represented at bloc[illegible] If the database memory 55 is full, then the database h[illegible]ng means refers to the search parameters which correspond to the current input user commands, if they exist, as represented by block 81. If the incoming record is deemed to be relevant in the light of the search parameters, then the database handling means calculates which records may be deleted and overwritten by the incoming record and replace the old record with the new record.

With any new database data which is to be stored, as represented at 79, the displayable record extracted from the data is transferred to the database memory 55 and stored at a prescribed memory location. Concurrently with this, the extracted index data associated with the displayable record is entered into an index table which is also stored within the database memory 55.

The database index table is most important as it contains indexes to all of the displayable records as they exist within the database memory at any particular instant of time. Consequently the database index table is changed and updated simultaneously with the changing and updating of displayable records so that the existing displayable records within the database memory can be searched directly in response to user commands.

Following the storage of displayable records and index data within the database memory, the receiver processing means returns to examining incoming database data as represented at 75.

A user can make a request for the communication of some of the information contained within the database at any time. Thus the third area or process is designed to respond to these user commands by searching the database in accordance with the search parameters input with the user commands and extracting displayable records which fall within the scope of the search parameters for viewing by user.

As shown in FIG. 3c of the drawings, the process as performed by the input means firstly involves monitoring any user commands which are input to the database receiver, as represented at block 83. In this respect, a user has a choice of displaying records stored within the database memory 55 which fall within a set of search parameters defined by the user commands. Accordingly when the appropriate user command is received via the interface decoding circuitry of the input means 31, the search parameters are updated or established as represented at 85 and the database memory 55 parsed for displayable records which fall within the established search parameters, as represented at 87. Whenever a displayable record is found that falls within the search parameters, the displayable record is formatted and passed to

the communication memory 59 which is represented by block 89. As previously described, the communication memory 59 is used to generate the user display and it is only displayable records which are stored within the communication memory 59 that are actually displayed.

The communication process is performed by the means 33 for communicating database records and initially involved formatting the communication memory 59 according to a prescribed communication or display format according to user commands as is appropriate as represented at block 93 and then communicating the result using the character generating means 63 on the display screen 15 as represented at block 95.

It is possible that more displayable records exist that match the search parameters, since the database is continuously being updated with database data broadcast from the central station 11. In order to accommodate this situation, particularly as only a portion of the total database data is actually capable of being stored within the database memory 55, and that further time is required in order for the constitution of the database to be focussed on the particular search parameters to store broadcast database data which previously was deemed not to be relevant, facility is made for the user to input user commands which allow scrolling up or down through the displayed list of records. Consequently, as more records are located from the dynamic database which match the search parameters these are passed to the communication memory 59 to be added onto the end of the list records to be displayed or which are being displayed and subsequently are displayed at the appropriate time to synchronise with scrolling by the user. This step is represented by block 97 where additional displayable records are added and subsequently displayed.

With respect to the formatting of the displayed records as represented at block 91, this formatting is performed according to a prescribed format which is pre-stored in the database receiver. This communication format is definable separately by appropriate control data broadcast from the central station 11 whenever considered appropriate. Importantly, it does not accompany each database data entry, hence maximising the volume of database data which is broadcast and hence greatly improving the efficiency of the system.

It should be appreciated that the present invention described with respect to the first embodiment has many advantages over previous distributed database systems such as Videotex and Teletext. Moreover, the particular concept of using a data record as the basic logic unit rather than a fully formatted page, as is the case with Teletext provides for more records to be transmitted more quickly. This is especially useful if the records are small such as in small advertisements.

Furthermore, the particular method of processing the received information and determining storage before displaying the same and the methodology of searching and displaying selected records instead of complete pages, overcomes the many limitations of Teletext. Accordingly in the present system, the majority of data which is transmitted are actual displayable records, whereas this is not the case in Teletext. Moreover in Teletext, the pages for eventual display are pre-formatted at the central station and therefore are transmitted as complete pages with display information, formatting characters and display colours. Thus, normally a large amount of empty space must be transmitted in every page that is transmitted making the Teletext method of broadcasting extremely inefficient.

Consequently, by using the present invention, a database structure is built up within the database receiver which can be perceived by a user to have many levels. Thus a user may generate a new level by inputting a search request command and the search parameters for the search request. Conversely, a user can retrace past searches by recalling previous levels, since the database data relied upon is still stored within the database memory. Thus a hierarchy of a theoretically unlimited extent of information can be built up.

Another feature of the present embodiment is that every "packet 31" decoder 45 has a subscriber address which is defined in the World Standard Teletext specification. This address comprises a unique number which is contained within circuits associated with the microprocessor thereof. The existence of these numbers means that the central station may address a particular user or set of users at receiver stations 13 and restrict information flow as required. Therefore a means is provided by which the central station can control the destination of information and thereby allow for subscription collection schemes to be set up to facilitate the commercial implementation of the system.

In one example of such an implementation, initially two data streams will be broadcast from the central station. One stream contains subscription data where access is only available after payment of a prescribed subscription fee and enabling of the database receiver, and the other stream is free to air. In other words there is a free component and a subscription component thereby providing two tiers of access.

Once the decoder is turned on, (and the appropriate channel selected on the TV) the database receiver displays the initial menu on the display screen of the TV or displays a flashing icon which shows that data has been received and is available for processing or display. Each menu item has a two digit code number (i.e. there can be up to 100 categories: 00–99 in total). For example category 00 may be classified advertising on the free or basic tier, category 01 may be a "Yellow Pages" type services directory and category 02 may be the newspaper. Categories 03—** may be the remainder of the free services. Categories **—99 (if all 100 categories are used) may be the subscription services and are not accessible to a non-subscriber. These categories appear on the screen and are designated in some manner as a subscription service, i.e. there will be a block denying access to these categories, to a free service user only. This initial menu is be transmitted with the data and may change from time to time as categories are added or deleted.

Once a user has made the initial selection by keying in the appropriate two digit code as a user command on the remote control interface, a second menu will appear, offering sub-categories of the initial choice. Again each sub-category is designated by a two digit code. At the level of sub-categories, all choices are available, i.e. there being no distinction between free and subscription services. By way of example within category 00, i.e. classified advertising, the first sub-category menu will offer the range of classifications, eg. for sale, real estate (for sale and rental), motor vehicles and employment. Each first level sub-category will be presented in blocks determined by the size of the database, eg. real estate A-C, or sale T-Z. Further differentiation into location, product, etc., will occur at the level of the next sub-category menu. Similarly the first level sub-category menu for category 02 (newspaper) will offer the various sections of a newspaper e.g., sport, finance (international and domestic), world news, politics (State and Federal), etc. Subsequent sub-category menus will effectively allow scanning of the newspaper by e.g. company name, politician, country, football code, etc. Sub-category menus will be transmitted with the data in the same manner

as the initial menu, allowing the available options to be altered as required to perform to a changing database.

At the level of all sub-categories, there is a maximum of 98 choices available (01–98). In addition to the sub-category choices (all levels), two digit codes (00 and 99) are reserved for exit commands. One enables the user to return to the opening menu, the other to initiate processing without the inputting of any further sub-category information. The exit commands appear as separate keys on the remote controller interface marked "exit" and "process" respectively. The exit command is able to be used to leave a display page and return to the initial menu. Consequently the sub-category menu screen displays up to 98 choices plus prompts for the user of the two screen exit keys. The remote control interface also has "page up" and "page down" (or "next" and "previous") keys to allow scrolling through large classifications.

Once the "process" key has been used (automatically when there are not further sub-category menus available on the pathway selected by the user) the database receiver generates a display of all the information meeting the criteria determined by the category/sub-category selection process, depending on the nature of the information provided. In some instances there will be no sub-categories at all whilst in others there may be up to four.

By adopting the present technique of storing database data within the database memory, processing time is kept to an absolute minimum before the first screen of selected information is available to the user.

It should be appreciated that the present embodiment provides for the expansion of the services available as described in the above example in terms of the size of the database. In this respect the database receiver is capable of looking for data on any of the channels within the RF range of the television user. Thus the database receiver is designed to have the ability to draw information from a number of carrier VBIs or from a full field data broadcast.

With reference to FIG. 4, a further example of the distributed database system of FIG. 1 is provided which incorporates a return link.

In the context of TV multimedia which receives forward directional information from a high bandwidth broadcast (point to multipoint) channel carrying RDS, TV packet 31 or their digital domain equivalents (MPEG, MPEG2 and Orthogonal frequency division multiplex broadcast data packets), for interactivity a point to point return link is needed. This return link communication can be of comparatively low speed.

A return link based upon a low speed frequency or phase shift keyed signal which uses standard signalling but is capable of only unidirectional operation may be constructed with relatively few parts.

With reference to FIG. 4 a multimedia TV apparatus 110 comprises a TV station 111 in forward communication with a multimedia TV set 113 by way of TV signal 112.

TV signal 113 is communicated via aerial 114 to a tuner 127 of a multimedia TV set which is adapted to be tuned to a TV signal of a particular television channel and to deliver video and audio information derived from that channel. The multimedia TV apparatus 110 additionally includes a multimedia microprocessor 123 which is adapted to derive data delivered via TV signal 112 from database 118 and to instruct the generation of a database visual information signal 117 based on that data for display on display 116.

In this example, the display processor 115 comprises a microprocessor 123 in communication with a data acquisition device 121, a display generator and display memory 131, 130 respectively and a data storage device 122. T.V. tuner 127 receives a TV signal 112 and derives primary data from a particular channel for display on display 116. The tuner also makes available to data acquisition device 121 from signal 112 information containing secondary data. The data acquisition device 121 derives the secondary data in conjunction with and under control of microprocessor 123 for display via display generator 131 on display 116 either over the top of or in conjunction with or instead of the visual information relating to the primary data. In addition microprocessor 123 can initiate the transmission of data from multimedia display processor 115 back to data base 118 of TV station 111 via an interface 141 adapted for connection to return link 140.

The data from database 118 can be encoded according to packet 231 protocol in the vertical blanking interval of TV signal 112. Other forms of permissible encoding for the data have been described previously. As will be appreciated TV signal 112 is representative of a one way forward link between TV station 111 (including database 118) and a multiplicity of multimedia TV sets 113.

A return link 140 according to this example is also illustrated in FIG. 4 and comprises a unidirectional link to database 118 in TV station 111 from multimedia microprocessor 123.

Return link 140 can be implemented via the public switched telephone network (PSTN), cellular or GSM telephone networks.

In this particular example as will now be described the return link 140 is implemented via the public switched telephone network operating between microprocessor interface 141 and database interface 142.

With particular reference to FIG. 4 the display processor interface 141 comprises a filter 143 adapted to shape and band limit encoded data signals generated by a microprocessor 123 (for example from the communication ports of an Intel 8051 microprocessor) and to pass the shaped and band limited signal to a line interface circuit 144 for connection to the PSTN.

Interface circuit 144 can comprise a line isolation transformer or an optoisolator and a relay for line connection.

In order to initiate transmission of data from multimedia display processor 115 to database 118 the microprocessor 123 connects the interface circuit 144 to the PSTN by activating the relay and then sends data by signalling. As the microprocessor 123 will not have an acknowledgement via return link 140 that the data has been received its software waits for an acknowledgement to be received embedded in the incoming broadcast system signals. The software operations of microprocessor 123 relevant to return data transmission are listed in FIG. 5.

It will be noted in FIG. 5 that if no acknowledgement is received to the data sent via return signal 140 then a redial and retransmission can be initiated by microprocessor 123 after predetermined periods of time.

With further reference to FIG. 4, a data storage 122 is partitioned into two portions, namely displayable data store 125 and executable data store 126.

The data stored in displayable data store 125 comprises data which, ultimately, will be translated into an image for superposition on display 116.

Executable data store 126 receives data comprising executable programme code for execution by data manipulator 123.

In use, when determining the manner in which to display displayable data derived from displayable data store 125, the data manipulator 123 executes code derived from executable data store 126. Accordingly, the manner in which displayable data is displayed on display 116 can be altered by amendment of the executable data located in executable data store 126.

Alteration can take place by substitution of new data acquired from database 118 via television signal 112.

In this embodiment the data storage 122 comprises flash memory which is a form of electrically erasable read and write memory. Accordingly data is maintained in a stored condition unless and until a specific substitution operation is performed.

Data manipulator 123 includes means for performing specific substitutions and further includes means for determining the nature of the data 120 received via the data acquisition device 121.

In one particular form the means for determining the nature of the database data comprises a control programme which resides in executable data store 126. The control programme interprets object identification header information associated with data objects transmitted in the Vertical Blanking Interval according to Packet 31 Protocol so as to determine the nature of the data contained within the object.

The control programme can then make a decision as to what is to be done with that data including the making of a decision as to where and whether the data is to be stored.

Broadly the data may be of a displayable nature intended for display and which is termed displayable data in this specification. Alternatively the data may be in the nature of executable code which can, for example, be directly executable by the data manipulator/CPU 123 or can be executable by the data manipulator/CPU after passing through an interpreter (which itself can form part of the control programme) or can comprise look up table data adapted for modification of the behaviour of executable code already resident in executable data store 126.

Functionally the control programme will determine the data to be one of the following types:

a) Displayable data for storage in displayable data store 125;

b) "Stream" data destined either for direct processing and display on display 116 or for temporary storage in the temporary data portion 128 of displayable data store 125 prior to display on display 116;

c) Subscription control data addressed to the multimedia display processor—the subscription control data modifying the behaviour of the control programme for the subscriber (the data can be in the form of look up table data and is broadly categorised as executable data for storage in executable data store 126). The subscription control data can also, for example include acknowledgement data relevant to communications which have taken place between the multimedia television set 113 and data base 118 by a communications route other than television, signal 112.

d) Executable data comprising a programme or programmes for execution by the data manipulator/CPU 123—such programmes might include display presentation programmes and the like, and

e) Data which it is determined is not destined for the multimedia display processor 115 and which is either, therefore, ignored or rerouted elsewhere.

The data originates from data base 118 and it is broadcast as discrete objects each of one type. Header information associated with each object is encoded with the object prior to transmission so that the nature and type of the information contained within the object can be determined by the control programme operated by the multimedia display processor 115 following reception by the television set 113.

The TV set 113 of FIG. 4 can optionally include a second tuner 129 which is in communication with data acquisition device 121 and is adapted to receive secondary data from a signal other than TV signal 112. The optional signal 145 can, for example, be a commercial FM radio signal containing secondary data encoded in accordance with the RDS system.

With reference to FIG. 6, a system substantially the same in operation to that described in respect of FIG. 4 will be described in detail.

Like components are numbered as for FIG. 4.

The system of FIG. 6 additionally includes a cordless telephone assembly 150, the handset portion 151 of which includes approximately 8 extra function buttons 156. The multimedia display processor 115 is built into the base station 152 of the cordless telephone assembly 150 (which becomes a "set top box" 155) and is connected to the television set 153 by a SCART or composite video connector 154. The display processor 115 controlled by the buttons 156 on the handset portion 151 via the RF connection 157 to the base station 158. (The number and designation of the buttons can be the same as on a standard infra red remote control with a standard set top box.) In this implementation there need be no infra red connection. The display is still presented on the television set 153, and the card can still dial numbers embedded in the data broadcast feed. The handset can also be used to dial out as a normal cordless telephone—i.e. either the handset 151 or the processor 115 can set up calls.

In an alternative implementation the display processor 115 is located in its own set top box 155 connected to the television set 153 by a SCART or composite video connector 154. It is controlled by a standard infra red remote control unit 159. The infra red remote control unit 159 also contains the handset portion 151 of the cordless telephone 150.

In the example of FIG. 6, the major data processing functions of the display processor 115 are divided into two parts—database retrieval and stream data monitoring.

Database data is recorded automatically to memory under the control of the CPU and subsequently fetched if requested by the user. Dependent upon the nature of the service, the database data may be stored in memory for a period of minutes, hours or (rarely) days before being replaced automatically by updates—i.e. the user is not able to control the replacement of database data by updates. Nor is the user able to input any data (other than commands)—there is no keyboard or disk drive.

The only situation in which database data is retained after replacement is if the data in question is in display memory at the time the update arrives. Database data may include bitmaps but does not consist of pre-formatted Word-type documents. Examples of database data are TV guides and newspapers. Data that will be formatted (by executable data) into the initial menus (which form the basis of the user interface) is also be held in memory.

Stream data is not recorded to memory unless a specific request has been entered by the user through a monitoring application. Only that portion of the total stream containing the most recent data that complies with all the request details entered by the user is stored—i.e. historical stream data is not stored. Once recorded to memory the stream data is stored in memory until erased by the user (i.e. on exit), overwritten (due to limited storage space) or superseded by

more current data captured in response to the same user request—i.e., a recurrent monitoring programme. Examples of stream data services are TAB, stock market, classified advertising and services directories. The menus for these are generated by database data associated with executable data.

Data broadcast data and multimedia TV data may substantially intersect. The multimedia TV data may in some instances be a subset of the data broadcast data. The stream data, some of the executable data and some of the database data of the multimedia TV data may be common with the data broadcast services. Subscriber control is the same. The one VBI can carry both services. All previous assumptions regarding the format and structure of the data broadcast signal will apply to multimedia TV data—i.e. Packet 31 transport layer and POST protocol object packaging (refer later description). Data broadcasting is however generally intended and destined for Personal Computers rather than television receivers.

When the multimedia display processor 15 is housed in a set-top box 155, it will connect to the television set 153 by a SCART connector.

However, the set-top box 155 will have its own power supply and infra red remote control 16.

FIG. 7 is a concept diagram for a distributed database system 210 incorporating a plurality of database receivers 211 adapted to receive data from more than one source.

In the arrangement of FIG. 7 there is illustrated one receiver 211 per household 212 although a household could operate more than one receiver 213 if so desired.

The fundamental building block of the system comprises each receiver 211 whose intelligent data processing characteristics allow the flexibility and usability in the broad context of multimedia systems not previously available.

Each receiver 211 is adapted to receive and process a data stream embedded within a carrier signal. The primary example given in this specification the data stream 213 is embedded in the vertical blanking interval portion 214 of television broadcast signal 215.

The organisation of the data stream 213 is important if maximum useability of the system is to be achieved. The organisation of the data stream 213 must lend itself to rapid interpretation by receivers 211 whilst making the best use of the bandwidth available to it. Utilisation of the vertical blanking interval portion 214 of a TV broadcast signal 215 is but one example of a datacasting method, all of which tend to be categorised by a relatively narrow bandwidth compared to the total bandwidth of the signal in which the data stream 213 is embedded.

TV station 216 can contain the database and data inserter from which data stream 213 originates and TV broadcast signal 215 can be delivered by any one of a number of known methods including VHF/UHF transmission microwave transmission, satellite transmission, fibre optic transmission.

The distributed database system 210 described thus far can be utilised in conjunction with a television set in communication with each receiver 211 whereby data from data stream 213, broadly categorised as either displayable data or executable data is processed by receiver 211 whereby at least portions of the displayable data can be displayed as database visual information on the television set screen in accordance with processing and commands forming part of the executable data as interpreted and executed by receiver 211.

Functionality can be added to the above described system by including access for each receiver 211 to the public switched telephone network or similar service. The public switched telephone network 217 adds bidirectionality to the distributed database system 210 and also adds a further source of data or at least provides a mechanism for access to a further source or sources of data.

In the particular case of the public switched telephone network 217 this network typically includes as an inherent feature an accounting and debiting mechanism for data which passes through the network.

Data accessed via the public switched telephone network (PSTN) 217 can be delivered to each receiver 211 by means such as electrical conductor, fibre optic cable, satellite delivery, microwave delivery or mobile telephone network delivery.

In many countries today PSTN access to the average household 212 is still narrow band (of the order of 5 kilohertz) however it is expected that the effective bandwidth of these services will be increased progressively as optical fibre networks replace electrical conductor networks and also as data compression technology advances.

In the description of examples to follow, additional detail and methods of implementation of receiver 211, the packet structure for data stream 213 and a complete distributed database system 210 derived from these fundamental building blocks will be described.

FIG. 8 illustrates a further example of the distributed database system of FIG. 1 which serves to illustrate the diversity of data which can be accessed by a user of a receiver 211 when multiple data sources are made available in the manner generally illustrated and described in respect of FIG. 7.

Conceptually the receiver 211 can be thought of as a data sorter and selective switch making available to an end user in an easily and often quickly accessible form despite the relatively narrow bandwidth of at least some of the channels over which the data must pass.

In this example receiver 211 can be linked to a television set 219, a remote personal computer 220 or a remote printer 221. All of these devices can receive data from the Vertical Blanking Interval of a television signal broadcast via satellite or aerial 222. Data is inserted into the Vertical Blanking Interval (for example utilising the packet 31 transport layer with POST protocol as later described in this specification) by high speed data inserter 223. The inserter can be, for example, a type DBL 95 which provides an aggregate data rate of greater than 38,400 bits per second.

The data inserter 223 receives data from a database located on file server computer 224. The file server computer 224, in turn, can receive data from other sources via terminal server 225 receiving information from third party information suppliers 226.

Ordinary television programme material is also scheduled via TV station scheduling computer 227, and sourced with replay machine 228 and video programme source 229.

The data thus provided to television receiver 219, PC 220, printer 221 and/or display board 230 is clearly unidirectional in nature.

In addition a bidirectional signal path 231 is provided via PSTN 232. A user of a receiver 211 in conjunction with television set 219 and telephone handset 233 can access or be put in contact with information sources operating through PABX 234, message bank 235, individual telephone system subscriber 236.

The bidirectional signal path 231 provides a three tiered capacity. Firstly, it permits of an outgoing message into the PSTN which may or may not elicit a response. Secondly, it permits a request for information from any information source connected to the PSTN. Information available may

be of any type, eg. prerecorded audio information, video information via an ADSL system. Thirdly, the signal path permits the setting up of a voice call.

A return link processor 237 orchestrates receipt supply and confirmation thereof of information accessed via the PSTN 232. The return link processor 237 may communicate with the file server computer 224 via terminal server 225 and can also communicate with financial services computers often connected on their own network 238.

It will be appreciated that the information services made available to devices such as remote printer 231 remote display board 230 and remote PC 229 are in the range of databroadcast as previously described whereas the information resources made available via receiver 211 to television 219 are of the broader nature previously described with particular reference to FIG. 6.

In order to give full effect to the capabilities of receivers such as receiver 13 described with reference to FIG. 1 and receiver 113 as described with reference to FIGS. 4 and 6 and receiver 211 described with reference to FIGS. 7 and 8 an appropriate data structure should be implemented within the packet 31 transport layer (or other databroadcast transport layer). A particularly suitable "object oriented" packet structure will now be described.

FIGS. 9A to 9G illustrate a specification for an object oriented packet structure for use for the transport of data of any of the examples of the invention as described above.

Data is transmitted in the form of packets—that is as a series of individual messages, each consisting of a number of bytes in a specified format. This format is defined by the protocol being used. This section describes the Protocol for Object and Stream Based Transport, hereafter termed POST, which is designed specifically for databroadcast applications.

POST packets may be transmitted directly over the broadcast medium, or they may be contained within packets conforming to another protocol. This "layering" of protocols allows POST to take advantage of the facilities provided by another protocol that may have been tailored for a particular medium or environment.

Since television transmission, and hence databroadcast, is unidirectional, receivers cannot acknowledge the successful reception of data. Consequently, a single transmission is usually repeated an arbitrary number of times to reduce the chance of data loss—the probability of a packet being corrupted in every retransmission rapidly diminishes as repetitions increase. As excessive repetition needlessly wastes bandwidth, field tests are conducted to determine the optimum number of repeats in a given installation. Alternatively, some form of error correction (where corrupted packets are "repaired" at the receiver) may be employed.

The Protocol for Object and Stream Based Transport (POST) is designed to insulate the application developer from the details of the databroadcast medium and to facilitate the rapid development of databroadcast applications.

Numerous data services can be broadcast simultaneously with each service identified by a service number. The service number is an important part of the control information associated with most POST packets. A receiver's ability to receive a particular service can be regulated as part of a subscription scheme administered by the databroadcast operator.

POST is based on the assumption that data can be represented in one of two ways: as a continuous stream, or as discrete objects. For example, a news article can be considered an object, while "live" stock market information can be thought of as a stream. Objects are grouped together in classes defined by the service provider. Object classes could include: file, fax, bitmap, soundtrack and programme.

To support this model, POST defines two types of message that may appear in a packet: the Stream message and the Object message.

In addition to the Stream and Object message types, a Command type is provided for high-level control purposes. It is very similar to the stream type, but provides a command facility independent of actual service data. The definition and implementation of commands is left to the service provider.

Finally, a Subscription Control message type is provided to allow the databroadcast operator to regulate receivers' access to the services available on the system. Note that this mechanism is completely independent of the Command message type.

Each POST packet includes a header that contains various control fields indicating its format and identifying its contents. For example, every POST packet includes a Message Type field and a Length field. Some of the information found in the header is not required in every packet or in every installation. For example, if POST packets are carried by an underlying protocol that provides error detection itself, the error detection facilities of POST are not required. As bandwidth is at a premium, unnecessary information and unused portions are eliminated from individual packets whenever possible, while facilities are provided for the inclusion of various additional information where it is required.

To achieve this, POST makes use of variable headers. Every header contains essential information, plus a small indicator field indicating the presence or absence of additional, optional information. If not required, this optional information is not included, and only the small overhead of the indicator field is incurred.

With reference to FIG. 9A a POST packet generally consists of a packet header and a data field or message, and is delimited by start and end fields for synchronisation. The packet type and format, and other control information such as the service to which the packet belongs, are specified in the packet header. A POST packet can also contain an error check field if the lower level protocol does not provide one. This error check, referred to here as the CRC but by no means restricted to that specific method, can be omitted if not required.

A Subscription Control packet is a special case, described separately below.

The packet header specifies the packet type and format, and the service to which the packet is bound. A number of optional fields are also provided. Space is reserved to add additional fields and format flags.

The packet header has the format shown in FIG. 9D (except in the case of a Subscription Control message).

The field definitions are as follows:

(i) Message Type

The Message Type field specifies the type of message contained in the packet.

(ii) CRC Type

The CRC Type field indicates the presence of a checksum at the end of the packet, and can also identify the error detection/correction scheme used.

(iii) Compression

The compression field indicates the compression scheme, if any, applied to the message field of the packet.

(iv) Length

The Length field specifies the length of the message field.

(v) Reserved Field

This portion of the packet header is reserved to allow future expansion.

(vi) Optional Field Flags

These flags indicate the presence or absence of the various optional header fields described later.

(vii) Service

The service field specifies the service to which the packet is bound. It can incorporate a service type indicator (eg. local/national). Extended service identification is supported by an optional header field.

(viii) Extended Service

The first optional header field is used to allow for the expansion of the service field.

(ix) Channel

The optional Channel field allows a Service to be subdivided for the simultaneous transmission of multiple objects or streams.

(x) Address

The optional Address field allows a packet to be directed to a specific receiver.

(xi) Sequence

If the underlying carrier protocol does not support sequencing (or is not present), this optional field can be used to sequence packets. This is most useful in stream transmissions, as objects have a separate sequencing mechanism built in.

With reference to FIG. 9C Stream and Command messages simply contain the raw stream or command data, to be processed as required by the service provider. All control information relating to the transmission of the stream (most importantly sequencing information) is contained in the packet header.

The data in the message may be compressed, as indicated by the Compression field in the packet header. Note that as any sequencing and other control information occurs in the packet header, a receiver can decide whether to discard a packet before decompression is required.

With reference to FIG. 9D which illustrates an object message, an object is broadcast by being broken up and transmitted as a number of fragments. Accompanying each fragment is a number called the fragment offset. The fragment offset specifies the position of the fragment within the object.

The advantage of fragmentation is that transmission errors can be confined to just a few fragments—decoders can combine the good fragments from each repeat broadcast to form a complete set.

The optional Channel field in the packet header can be used to allow several objects to be transmitted simultaneously on the same service, by assigning each to a separate channel.

An Object Message is used to broadcast a fragment of an object. The message consists of a type field followed by the object fragment. There are three fragment types—Beginning of Object (BOO), Continuation of Object (COO), and End of Object (EOO). Essentially, one BOO fragment initiates the transmission of the object, several COO fragments transfer the object data, and one EOO fragment ends the transmission. The EOO fragment may be smaller than the COO fragments.

With reference to FIG. 9E, the BOO fragment contains information about the object and the transfer itself.

The field definitions of a BOO message are as follows:

(i) Group

The Group field identifies a group to which this object is directed. The group can consist of one or more receivers. The grouping scheme is independent of the POST protocol.

(ii) Class

The Class field contains a numeric value that specifies the object's class. The value is defined by the service provider.

(iii) Object Identifier

The Object ID field contains a number that uniquely identifies the object. The value is defined by the service provider.

(iv) Object Size

The Object Size field specifies the size of the complete object.

(v) Fragment Offset Length

The Fragment Offset Length specifies the length of the Fragment Offset field of subsequent COO and EOO fragments.

(vi) Fragment Length

The Fragment Length field specifies the size of the object fragments in subsequent COO fragments.

(vii) Object CRC

The Object CRC field contains a cyclic redundancy check (CRC) of the complete object. It is used after the EOO fragment is received to confirm that the object has been correctly received and assembled.

With reference to FIG. 9F the object broadcast continues with "Continuation of Object" (COO) fragments. The last fragment is transmitted as an "End of Object" (EOO) fragment. These two fragment types are identical in format.

The field definitions are as follows:

(i) Fragment Offset

The Fragment Offset field specifies the position of the fragment within the object. Fragment Offsets start at zero and increase by one for each fragment.

(ii) Fragment Data

The Fragment Data field contains the actual object fragment.

As subscription control is a fundamental issue in subscriber databroadcast services, a special message type has been dedicated to this facility. The format of the Subscription Control message is quite different from the other message types—the packet header is significantly stripped down.

FIG. 9G shows both the packet header and message structures for a Subscription Control message.

To simplify processing, the packet header is similar to the first part of the normal packet header. Note that a packet CRC and compression are provided for. The packet length field is used, but other packet header fields are not supported. The Message Type field will always indicate a Subscription Control message.

The fields in the message portion of the packet are defined as follows:

(i) Address

The Address field specifies the receiver to which the Subscription Control message is directed. This is the same kind of address that appears in the optional Address field of the standard Packet Header.

(ii) Command

This field contains the actual subscription control command. Typical commands include: Subscription Service, Unsubscribe Service, and Unsubscribe All Services.

(iii) Continue

The Continue field indicates that the message contains another command after this one.

(iv) Service

The service field specifies the service to which the command applies.

(v) Extended Service

This optional field is used to specify an extended service number.

(vi) Additional Commands

The Continue field allows multiple commands to the same receiver to be transmitted in a single packet. These commands appear consecutively in the message, with the Continue fields set in all but the final command.

Any one of the display processors referred to in the examples of receivers 13, 113, 211 can be implemented utilising VLSI logic as illustrated in block form in FIG. 10.

Components in FIG. 10 are numbered according to the first embodiment described with respect with FIGS. 1, 2 and 3.

In this implementation CPU 51 can comprise an Intel 87C51FC embedded controller containing 32 Kbyte of programme memory. Closely coupled to CPU 51 is memory 55 comprising 128 Kbytes of RAM. Additional memory 59 comprising communication or screen memory services a display and acquisition device comprising a Plessey MV1815 IC performing the function of means for communicating 33.

Decoder means 25 comprises an Altera EPM 5128 device which decodes the raw packet data, selects the appropriate packet 31 channel, demultiplexes computer memory addresses for memory 55, selects the appropriate programme or data portion of memory 55 and writes the data out to FIFO 47. The FIFO is a QS 2704 IC utilised to buffer incoming packet 31 data destined for CPU 51.

Input output devices include: power port 70 which provides a source of 5 volt power and provides printer output from CPU 51.

IRC port 71 provides infra red remote control access.

A DTMF generator 72 attaches to PSTN interface 73 for dialing, modem signalling and general telephone network access. A SCART video output 74 provides data access to the television set under the control of means for communicating 33.

The above describes only some embodiments of the present invention and modifications obvious to those skilled in the art can be made thereto without departing from the scope and spirit of the present invention.

INDUSTRIAL APPLICABILITY

The database system and the individual receivers as described in various embodiments of the specification are particularly useful for the dissemination of a broad range of information to the home and office. The information can be visual or audible in nature and can be derived from more than one source.

What is claimed is:

1. In a method for broadcasting data to a television set using a carrier signal such as a television or commercial radio carrier signal, the improvement comprising:

constructing a data stream from individual first record of a transmission database, each first record comprising one of a selection of formats, at least one of the first records comprising executable program code or an object;

broadcasting the data stream within the carrier signal;

providing a user with a user's device for receiving and decoding the data stream, the user's device receiving and decoding the data stream to a user's database, the user's database having second records comprising at least some of the first records, the second records comprising one of a selection of formats and at least one record comprising executable program code or an object broadcast from the first records;

determining the format a second record using a control program;

running, when required, the executable program code; and

generating a display on the television consistent with the format determined by the control program.

2. The method of claim 1, wherein at least one first record comprises stream data and the display on the television comprises an audio presentation.

3. The method of claim 1, wherein at least one first record comprises index data and the display on the television comprises menus based on the index data.

4. The method of claim 1, further comprising the steps of supplying the user's database with requested records, the requested records being the result of a return link established between a microprocessor which operates with the user's database and the transmission database, the return link established at least in part via a telephonic network.

5. The method of claim 4, wherein a second data stream is received over the return link.

6. The method of claim 1, wherein the data stream comprises one or more data objects represented by information encoded in a first object and packet based protocol.

7. The method of claim 6, wherein the information is broadcast in a second packet based protocol.

8. In a method for broadcasting data to a television set using a carrier signal such as a television or commercial radio carrier signal, the improvement comprising:

constructing a data stream from the records of a transmission database; and

the database having individual first records, each first record comprising one of a selection of formats, at least one of the first records comprising executable program code or an object; broadcasting the data stream within the carrier signal.

9. The method of claim 8, wherein at least one first record comprises stream data and the display on the television comprises an audio presentation.

10. The method of claim 8, wherein at least one first record comprises index data and the display on the television comprises menus based on the index data.

11. The method of claim 8, further comprising the step of supplying a user's database with requested records, the requested records being the result of a return link established between a microprocessor which operates with the user's database and the transmission database, the return link established at least in part via a telephonic network.

12. The method of claim 11, wherein a second data stream is received over the return link.

13. The method of claim 8, wherein the data stream comprises one or more data objects represented by information encoded in a first object and packet based protocol.

14. The method of claim 13, wherein the information is broadcast in a second packet based protocol.

15. In a method for receiving data for a television display using a carrier signal such as a television or commercial radio carrier signal, the improvement comprising:

receiving a carrier signal and from it decoding a data stream to a user's database, the user's database comprising individual records comprising records recovered from the data stream, the individual records comprising one of a selection of formats and at least one record comprising executable program code or an object broadcast from the first records;

determining the format an individual record using a control program;

running, when required, the executable program code; and

generating a display on the television consistent with the format determined by the control program.

16. The method of claim 15, wherein the data stream further comprises stream data and the display on the television comprises an audio presentation.

17. The method of claim 15, wherein at least one first record comprises index data and the display on the television comprises menus based on the index data.

18. The method of claim 15, further comprising the step of supplying the user's database with requested records, the requested records being the result of a return link established between a microprocessor which operates with the user's database and a transmission database, the return link established at least in part via a telephonic network.

19. The method of claim 18, wherein a second data stream is received over the return link.

20. The method of claim 15, wherein the data stream comprises one or more data objects represented by information encoded in a first object and packet based protocol.

21. The method of claim 20, wherein the information is broadcast in a second packet based protocol.

22. In a communications device such as a personal computer or television or set top box adapted to receive a data stream broadcast over a carrier signal, such as a television or radio carrier signal, the improvement comprising:

a receiver for receiving broadcast database records;

a decoder and processor for extracting individual data records from the data stream to a user's database, the user's database comprising individual user records comprising at least some records recovered from the broadcast database records;

the user records recovered from the broadcast database records comprising one of a selection of formats and at least one record comprising executable program code or an object broadcast from the first records;

a control program for determining the format a user record;

a processor for running, when required, the executable program code; and

a display generator for creating a display consistent with the format determined by the control program.

23. The device of claim 22, wherein the data stream further comprises stream data and the display comprises an audio presentation.

24. The device of claim 22, wherein at least one user record comprises index data broadcast in the broadcast database data and the display comprises menus based on the index data.

25. The device of claim 22, further comprising a return link for sending commands to supply the user's database with requested records, the return link established between a microprocessor which operates with the user's database and a transmission database, the return link established at least in part via a telephonic network.

26. The device of claim 25, wherein a second data stream is received over the return link.

27. The device of claim 22, wherein the data stream comprises one or more data objects represented by information encoded in a first object and packet based protocol.

28. The device of claim 27, wherein the information is broadcast in the data stream in a second packet based protocol.

29. In a device for broadcasting a carrier signal such as a television or commercial radio carrier signal to a user, the improvement comprising:

a computer having a transmission database;

the database having individual first records, each first record comprising one of a selection of formats, at least one of the first records comprising executable program code or an object;

an encoder for creating a packet based data stream constructed at least in part from the first records;

an inserter for inserting the data stream into another signal and a transmitter for broadcasting the data stream.

30. The device of claim 29, wherein at least one first record comprises stream data and the display comprises an audio presentation.

31. The device of claim 29, wherein at least one first record comprises index data used for displaying to the user menus based on the index data.

32. The device of claim 29, further comprising a return link for accepting user requested records, the link established between a microprocessor operated by the user and the transmission database, the return link established at least in part via a telephonic network.

33. The device of claim 32, wherein a second data stream is received over the return link.

34. The device of claim 29, wherein the data stream comprises one or more data objects represented by information encoded in a first object and packet based protocol.

35. The device of claim 34, wherein the information is broadcast in a second packet based protocol.

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